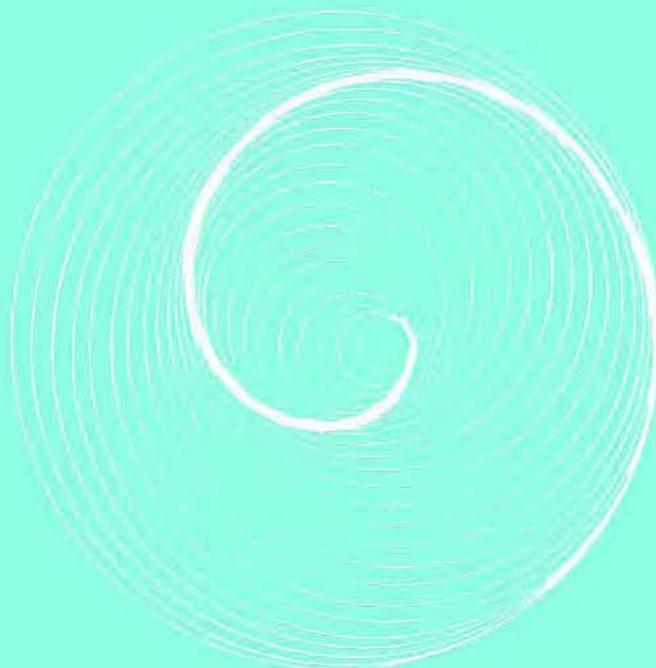
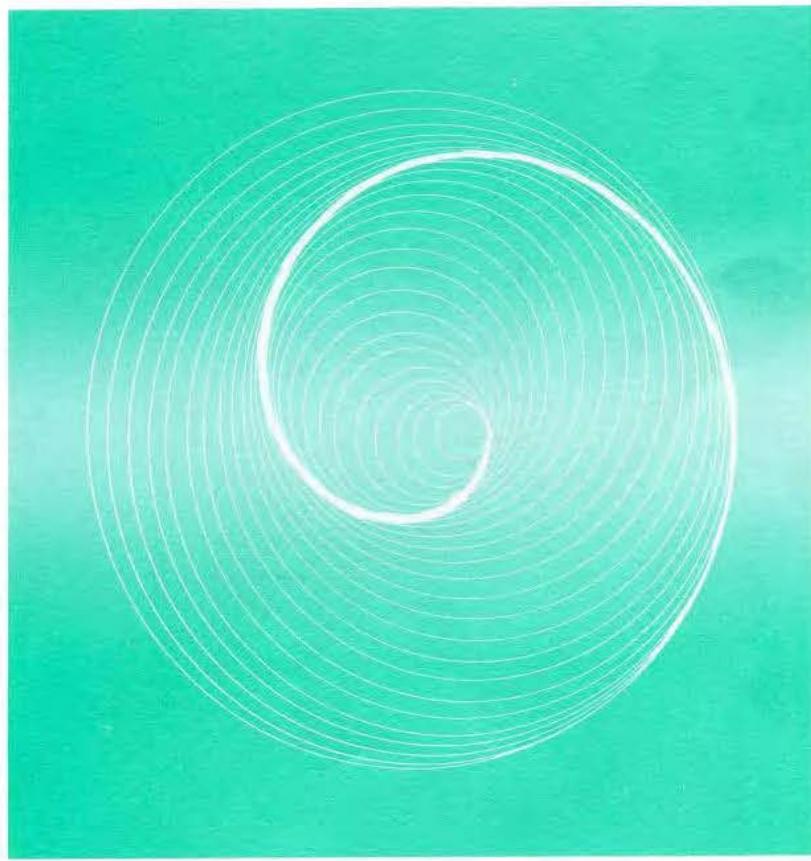


RIBBER TECHNIQUES BOOK



brother®

RIBBER TECHNIQUES BOOK



CONTENTS

Knitting symbols used for the ribbing attachment 1 2

How to read the knitting symbols	4
How to read carriage, racking indicator and half pitch lever in the diagram.....	5

How to work 20 basic pattern stitches 2 6

1 1×1 rib	6
2 2×2 rib	9
3 Full Needle Rib	12
4 English Rib	14
5 Fishermans Rib	15
6 Racking pattern of English rib.....	15
7 5×5 rib	16
8 Racking pattern (1).....	17
9 Racking pattern (2).....	18
10 Tacking pattern.....	19
11 Pin tuck pattern or Ripple stitch.....	20
Pin tuck pattern (1).....	21
Pin tuck pattern (2).....	22
12 Drop stitch pattern	23
13 Multi-coloured rib pattern.....	24
14 Relif pattern.....	26
15 Cable stitches	27
16 Transferred stitch pattern.....	28
17 Plating pattern (Stitch 1).....	29
Plating pattern (Stitch 2).....	30
18 Circular knitting.....	31
19 U style knitting.....	32
20 Quilting pattern.....	33
Pattern variation by changing needle arrangements	
Tucking pattern.....	34
Racking.....	35
Herringbone pattern.....	36
Pleats.....	37

Techniques of increasing and decreasing 3 38

■ Increasing and decreasing 1 stitch	38
Increasing with full needle rib	39
■ Increases on 2×2 rib (Half pitch lever to P)	40
■ Decreases on 2×2 rib (Half pitch lever to P)	41
■ Increasing stitches on 2×2 rib (Half pitch lever to H).....	42
■ Decreasing stitches on 2×2 rib (Half pitch lever to H).....	43
■ Increasing on racked English Rib (Half pitch lever to H).....	44
Decreases on racked English Rib (Half pitch lever to H).....	46
Increasing on racking pattern over 2 pitches (Half pitch lever to H)	48
Decreasing on racking pattern over 2 pitches (Half pitch lever to H).....	50
Increasing more than 2 stitches	52
Decreasing more than 2 stitches	53
Fully-fashioned increases and decreases	54

Partial knitting techniques 4 58

1×1 rib (Shaping by using holding position)	58
English Rib	62
Racking pattern in English Rib.....	64
Shaping and racking	66

4 Things to know before you begin *5* 67

① How to estimate the quantity of yarn your work.....	67
② How to use the tension dial	68
③ How to make good use of the weights	69
④ How to make and measure a tension swatch.....	71

Cast on techniques *6* 75

How to work the finished edge cast on with circular knitting	75
How to re-arrange the needle for pattern stitches	77
How to finish ribbed edges by hand.....	80

Techniques for neat finishing *7* 83

Sewing and seaming.....	83
-------------------------	----

Advices for successful knitting *8* 86

Using correct measurments	86
Collar Poloneck collar.....	89
Turtleneck collar.....	91
V-neck collar	93
Italian collar.....	96
Straight collar.....	98
Flat collar.....	100
Shawl collar.....	102
Tailored collar	104
Standing collar.....	106
Pleats	108
Inverted pleats skirt.....	109
Sunrays pleated skirt.....	110
Accordion pleated skirt.....	111
Knife pleated skirt.....	112
Frill.....	113
Braid.....	116
Triming Trimming with circular knitted braid.....	117
Trimming with folded braid	117
Trimming with racking pattern in English Rib	118
Right angled cord and curved edging.....	119
Scallaps.....	120
Buttonhole.....	121
Pockets Patch pocket.....	123
False pocket	124
Horizontal pocket No.1	125
Horizontal pocket No.2	126
Horizontal pocket No.3	127
Vertical pocket	128
How to make a punch card and pattern card	129

Knitting symbols used for the ribbing attachment

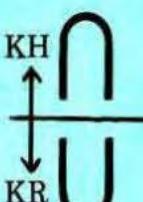
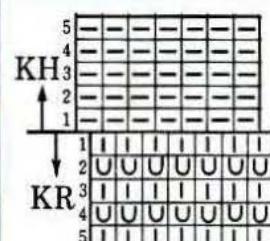
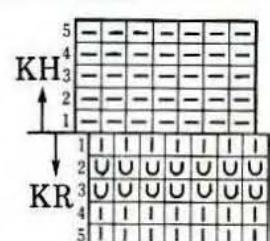
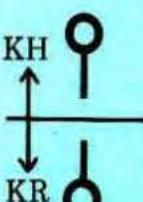
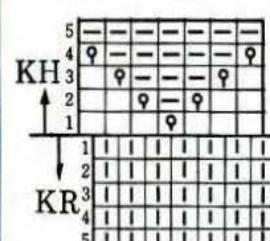
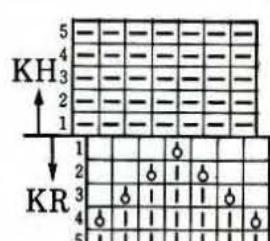
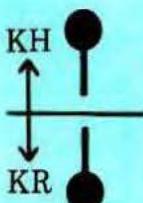
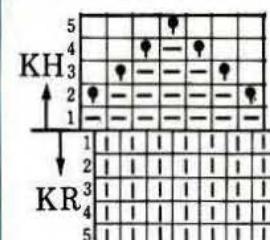
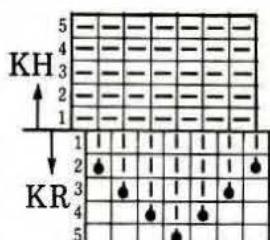
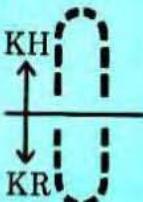
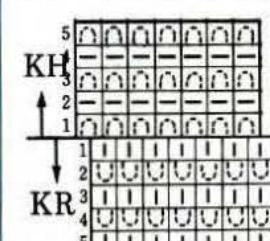
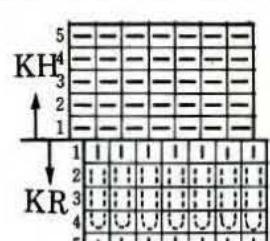
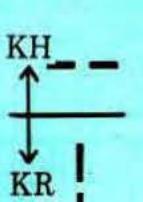
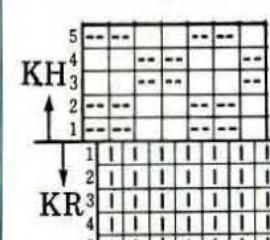
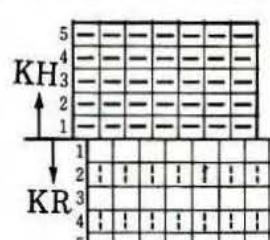
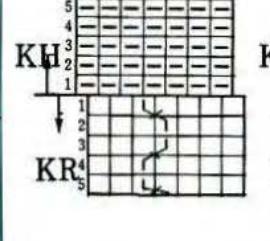
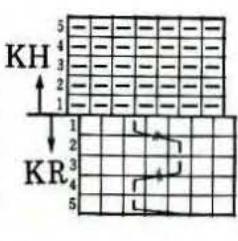
Familiarise yourself with the Knitting Symbols used for the ribbing attachment. They show what the stitches look like from the wrong side of the knitting. The Knitting Symbols for the ribbing attachment (KR) are shown in conjunction with the main machine (KH) and therefore are the reverse of the symbols for the main machine.

Name	Symbol	The Symbols represented in diagram form and the explanation	
Purl stitch	—		Purl stitch on KH
Plain stitch			Plain stitch on KR
Hole	○	A hole is made by transferring a stitch to its adjacent needle, leaving the needle in B position.	
2 stitches together	↙		Where the symbol appears, transfer the right stitch over the left stitch, or transfer the left stitch over the right.
	↖		
Three stitches together	↖ ↘		The middle stitch will be to the front on the right side of the fabric. The two adjacent stitches are transferred to the middle stitch needle, either left over right or right over left, as required.
	↖ ↗		
	↖ ↙		
Lean stitch	↙ ↖		Stitches may be moved either on their own or in numbers along the row one position, similar to fully-fashioned increase or decrease (diagram (A)). Sometimes the whole stitch is not moved to the next needle but a loop is taken from it and hooked onto the adjacent needle, Diagram B.
	↘ ↗		
Cross stitch or Cables	×	(A)	Cross stitch — two single stitches are taken off their needles crossed over and replaced (diagram (A)). Cables are where two or more stitches are taken off their needles, crossed over and replaced (diagrams (B) and (C)).
	×	(B)	
	×	(C)	

Non-working needle. (The needle is placed in A position).

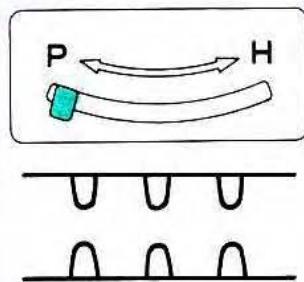
KH Main machine (KH)

KR Ribbing attachment (KR)

Name	Symbol	Graph and Explanation		
Tuck Stitch		 KH 5 4 3 2 1 KR 5 4 3 2 1	 KH 5 4 3 2 1 KR 5 4 3 2 1	Where this symbol appears, set the KH carriage for TUCK and cam lever on KR carriage for P.R. and knit.
Push up Stitch		 KH 5 4 3 2 1 KR 5 4 3 2 1	 KH 5 4 3 2 1 KR 5 4 3 2 1	Where this symbol appears, push the needle from A position to B position.
Return Stitch		 KH 5 4 3 2 1 KR 5 4 3 2 1	 KH 5 4 3 2 1 KR 5 4 3 2 1	Where this symbol appears, transfer the stitch onto the corresponding needle on the opposite bed and push back the empty needle to A position.
Skip Stitch		 KH 5 4 3 2 1 KR 5 4 3 2 1	 KH 5 4 3 2 1 KR 5 4 3 2 1	Where this symbol appears, set the KH for skip and cam lever of KR carriage for P.R. The marked needles skip.
Dropped Stitch		 KH 5 4 3 2 1 KR 5 4 3 2 1	 KH 5 4 3 2 1 KR 5 4 3 2 1	Where this symbol appears, push up the needle to B position and knit given number of rows. Drop the loops and push back the needles to A position. (Used for drive stitch and wave pattern).
Racking	 One pitch to the right  One pitch to the left	 KH 5 4 3 2 1 KR 5 4 3 2 1	 KH 5 4 3 2 1 KR 5 4 3 2 1	By using the Racking Handle, rack KR to the direction shown by the oblique line. For 1 stitch, turn the handle 1 pitch, for 2 stitches 2 pitches, and for 3 stitches 3 pitches.

How to read the knitting symbols

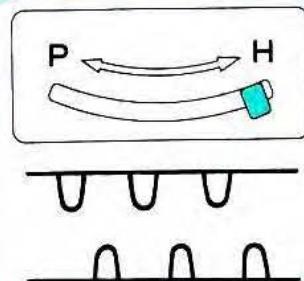
When the half pitch lever is on P



The needles on both beds are exactly opposite each other. When this is the case, NEVER knit using all needles in working position.

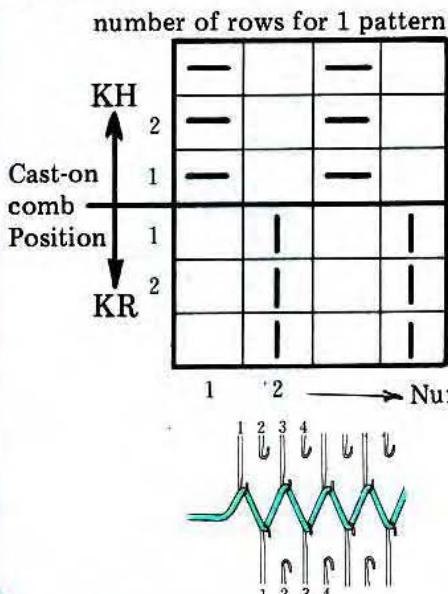
Read the number of rows for KH above the cast-on comb position, and downwards from it for KR.

When the half pitch lever is on H.



When the needles are at half pitch, it is possible to knit on every needle (full needle rib).

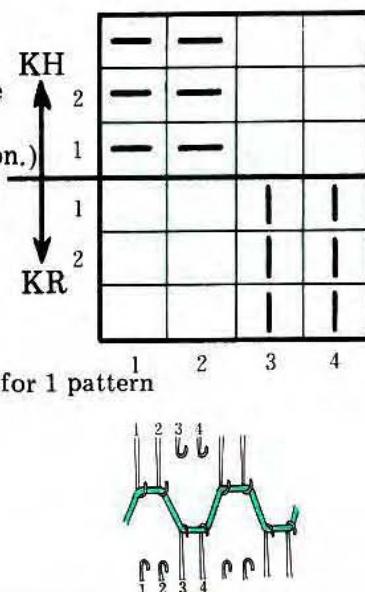
● 1x1 rib



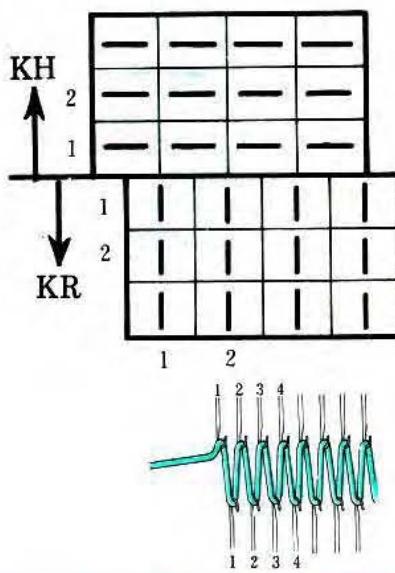
Empty needle
(The needle
is in A position.)

A stitch
worked by
setting
for plain

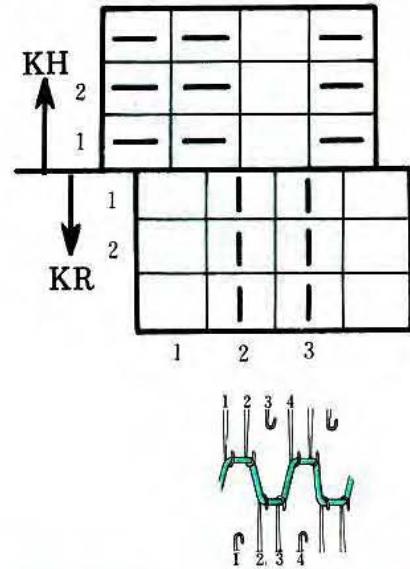
● 2x2 rib



● Full needle rib



● 2x2 rib



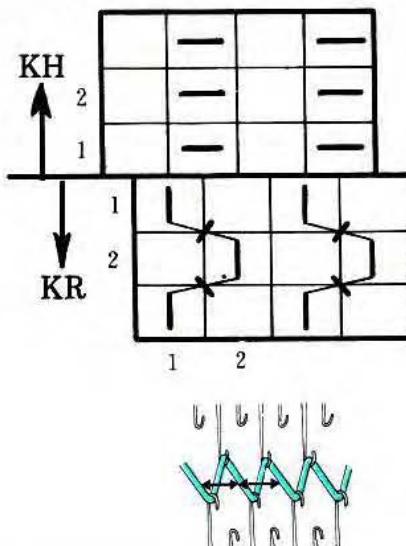
● Racking 1 stitch

When you work a pattern, set the half pitch lever at H so that the needles on KR take positions left and right of the needles on KH.

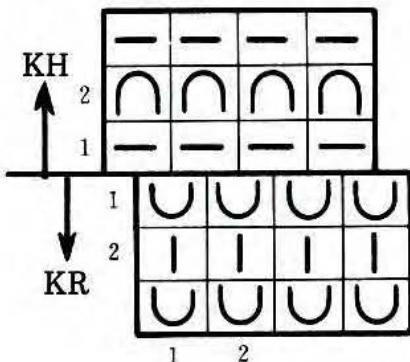
● For Fishermans Rib

The knitting symbols for the ribbing attachment are as a rule, represented by the reflected form of the symbols for the main machine.

● Racking 1 stitch

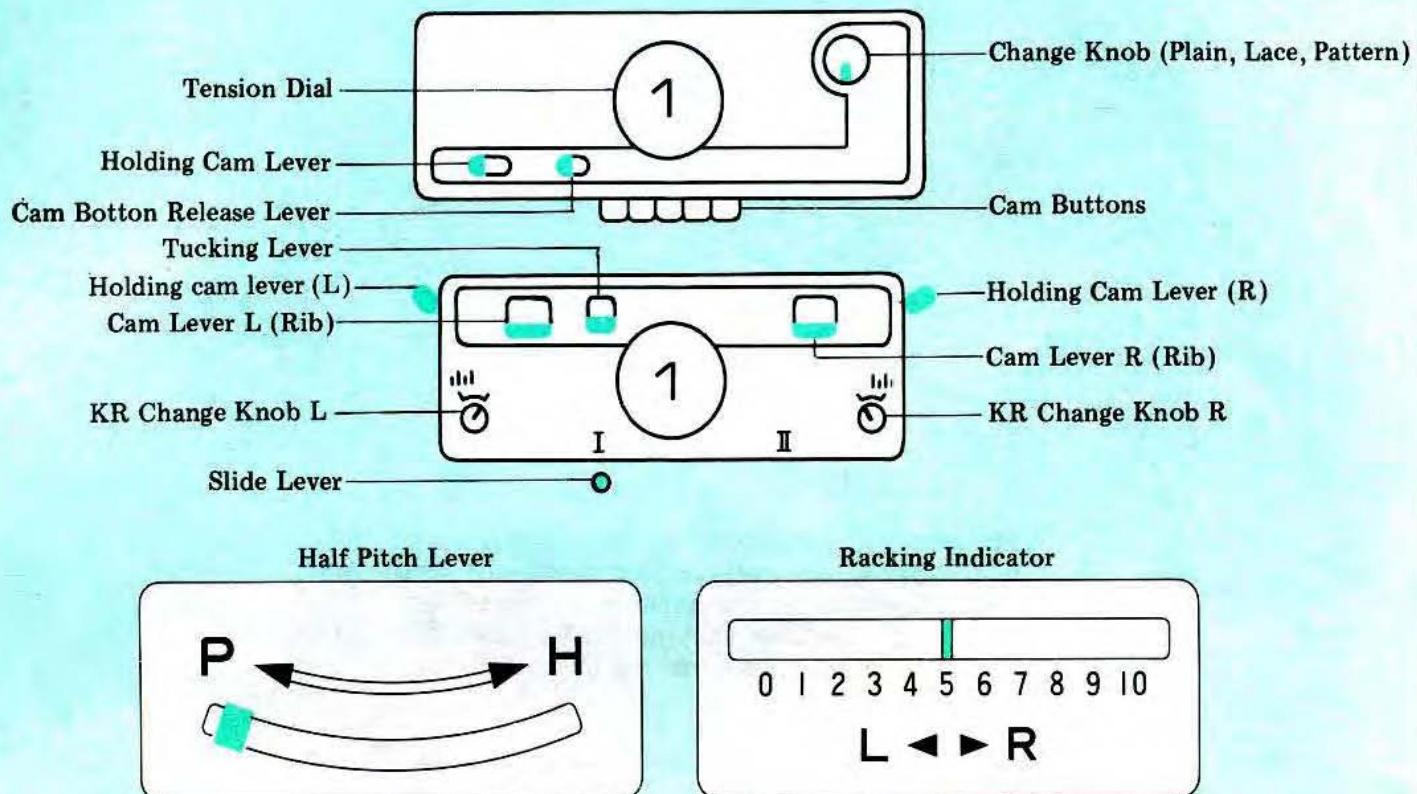


● For Fishermans Rib



How to read carriage, Racking indicator and Half Pitch Lever in the diagram

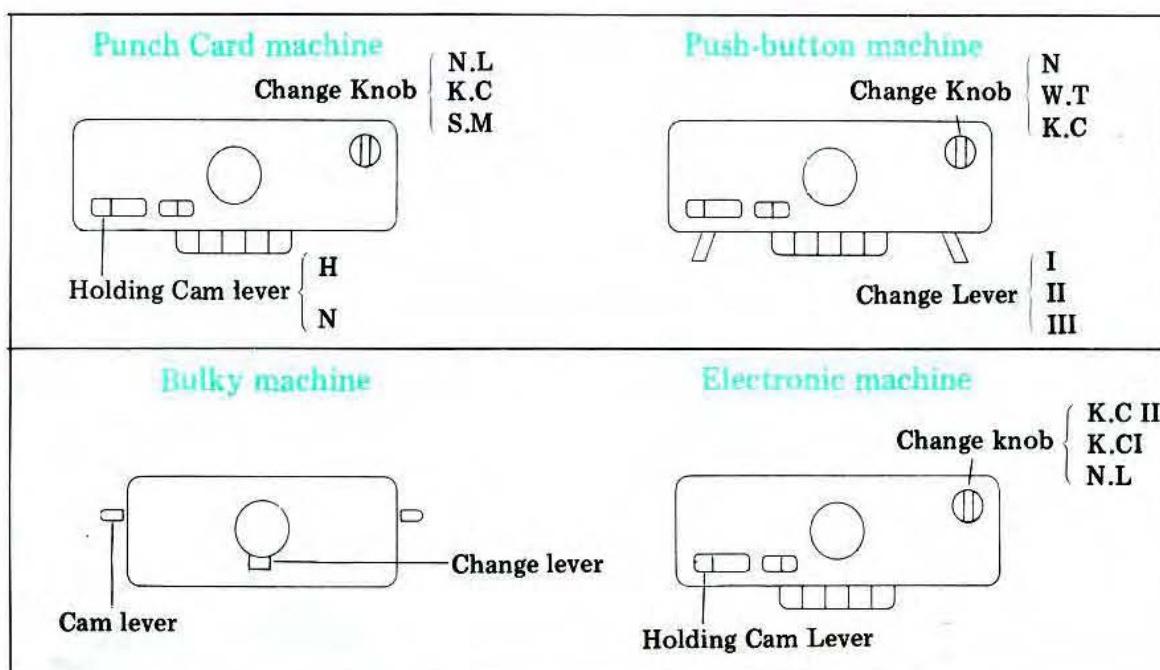
* Set only the parts indicated *



Push button machine, Bulky machine or Electronic machine owners

The information given in this book is for all the punch card machines. Therefore, when you use the push-button machine Bulky Machine or Electronic Machine the structure of some parts are different from the punch card machine, so pay attention to the following information.

* On Push-button machines the needles are selected by the Push-button and the Set lever, while with Punch card machines, the needles are selected by Punch card. However, with the ribbing attachment there is no difference and the way in which it is used is the same.



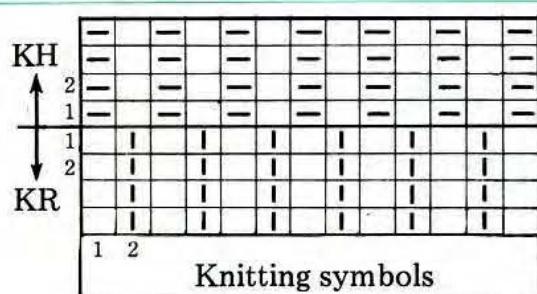
How to Work 20 Basic Pattern Stitches

2

1 1×1 rib



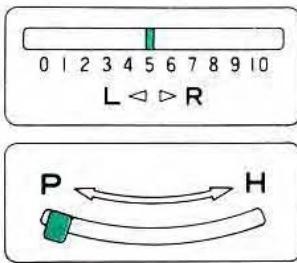
The above stitch represents the most basic rib pattern worked on every other needle of both KH and KR beds. As the garments worked in 1x1 rib have high elasticity they are widely used for cuffs and waist bands as well as for basic knitting.



● How to start knitting (Medium yarn.)

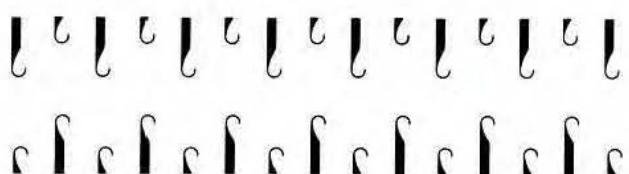
1 Setting the machine

Set each part of the machine and carriages as illustrated by the diagram below.



② Needle arrangement

Using the 1×1 needle pusher, push every other needle from A to B position, making the opposite arrangement on the KR as illustrated. Ensure that the end needles are always on the KH.

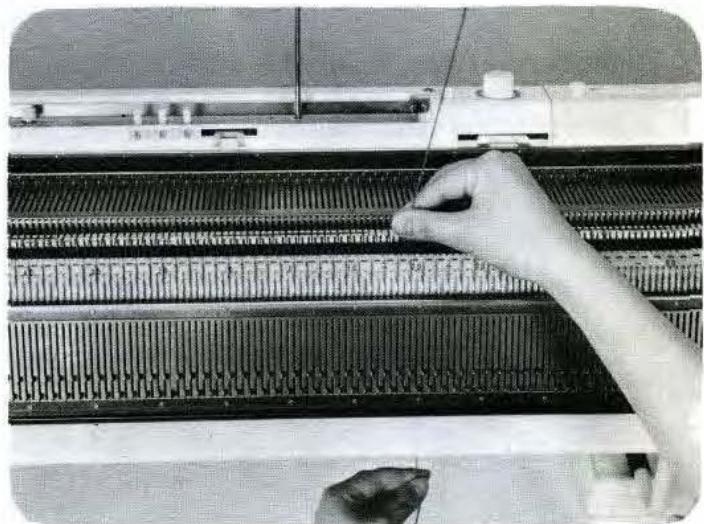


Move the carriage 2 or 3 times gently over the arranged needles to align them finishing with the carriage on the right-hand side.

③ Casting on

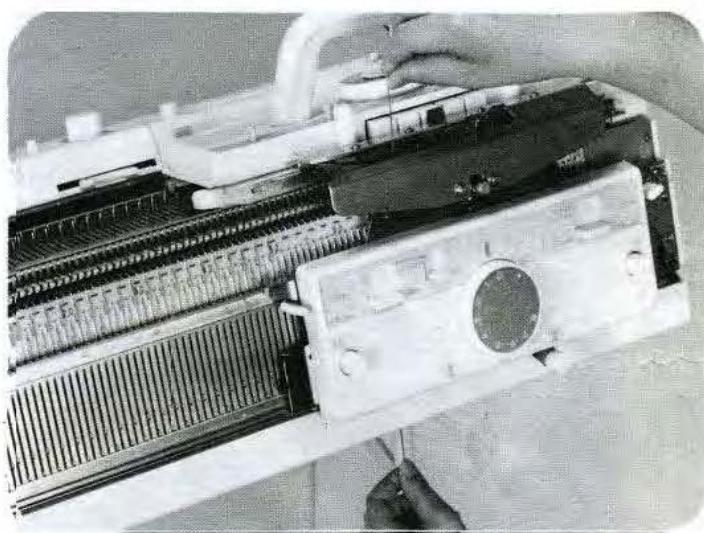
① Place the yarn between the gate pegs on KH and KR.

Hold the end of yarn as illustrated in the photograph.

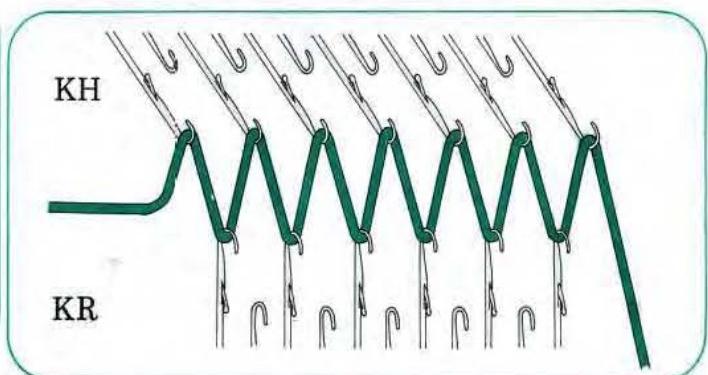
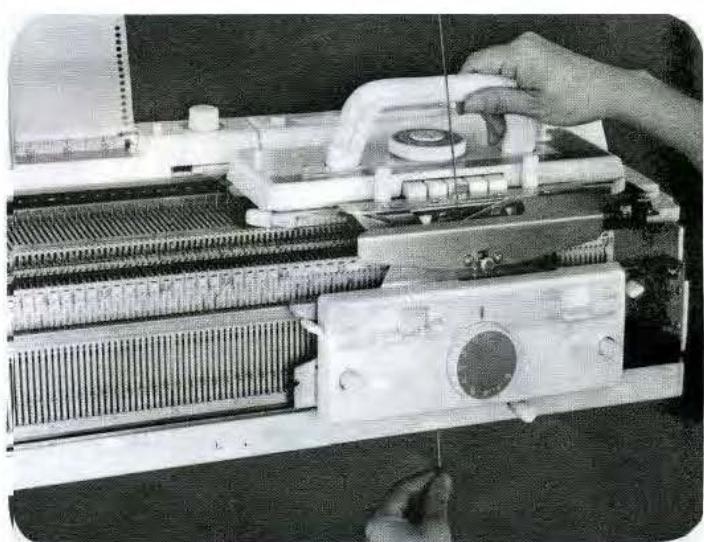


② Thread the yarn into the yarn feeder.

(See instruction manual accompanying Ribber attachment)

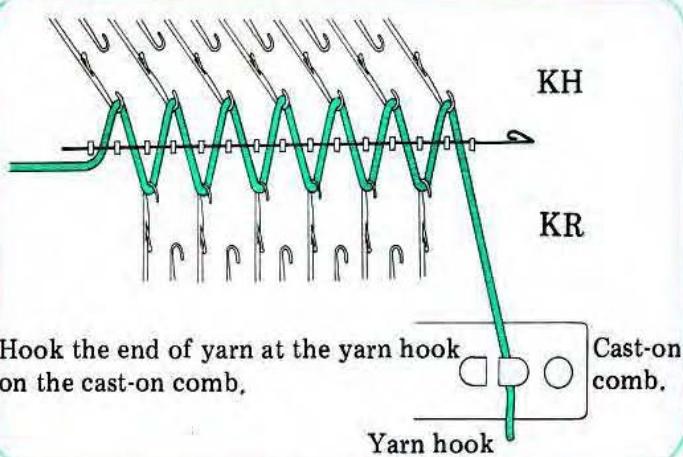


③ While holding the yarn end with your fingers move the carriage gently toward left side. The yarn will be caught on the hooks of the needles as illustrated.



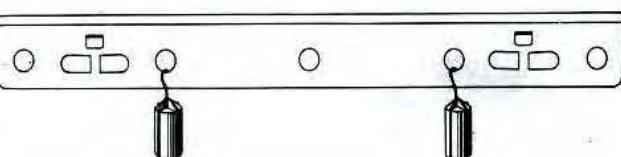
④ Cast-on comb

Remove the wire from the cast-on comb. By holding the comb with the teeth towards you, and, adjusting the balance, insert the teeth through the alternately hooked yarn. Replace the wire.



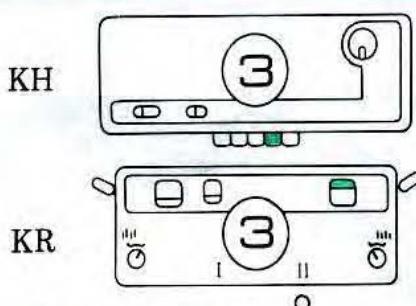
⑤ Hang on the weights

Hang on standard number of weights according to the number of stitches. (2 big weights for every 50 – 100 stitches). Check that the comb hangs level.

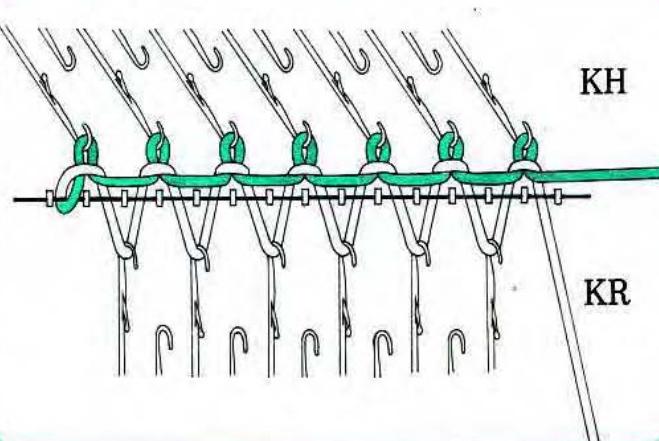


⑥ Finished edge by circular knitting.

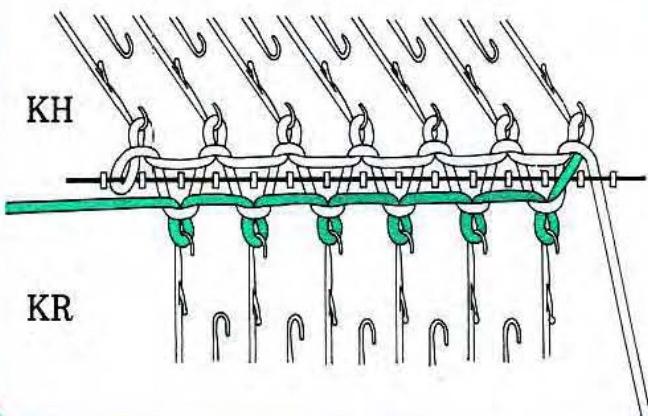
Set the carriages as the diagram below.



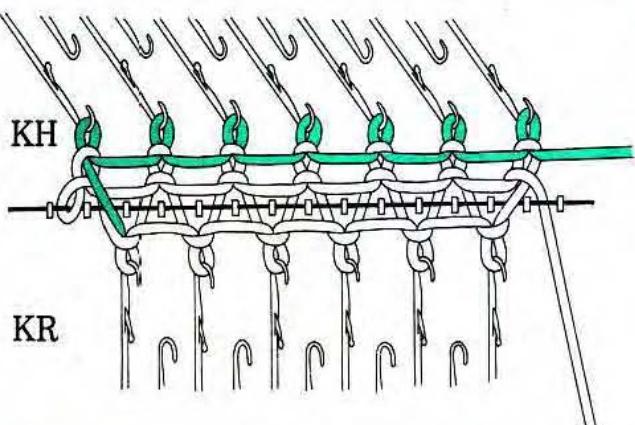
① Move the carriage to the right → to knit a row on KH only.



② Move the carriage to the left ← to knit a row on KR only.



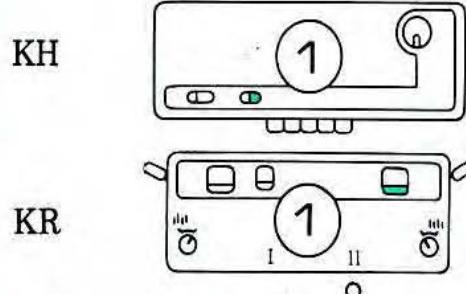
③ Move the carriage to the right → to knit a row on KH only.



★ Above operations complete the finished edge.
(Finished-edge cast on using circular knitting)

● How to knit

Set the carriages as illustrated below. Move the carriage back and forth to knit 1x1 rib.

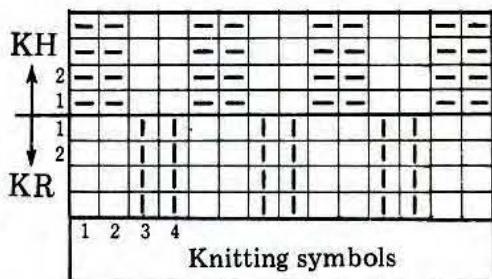


- ★ Never return the carriages halfway through a row.
★ Return the carriage after it has passed over all the working needles completely.

2 2×2 rib

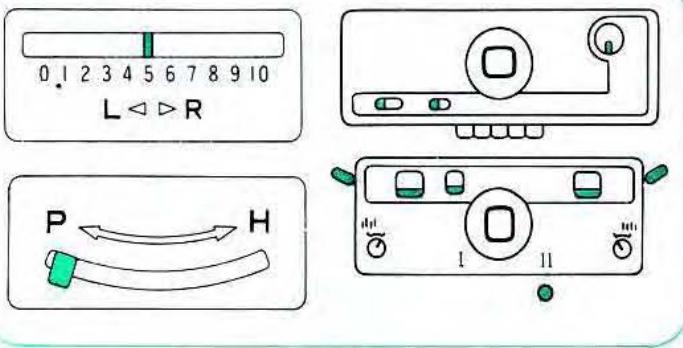


A garment in this pattern has 2 plain stitches and 2 purl stitches in vertical stripes. There are two kinds of needle arrangements on both beds, 2×2 and 2×1 . (A) 2×2 rib is recommended for fitted sweaters or it is sometimes used where elasticity is required.



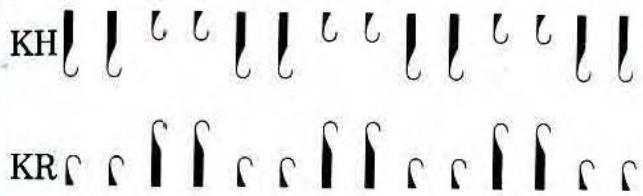
● Casting on (medium yarn.)

Set the machine and carriages as illustrated below.

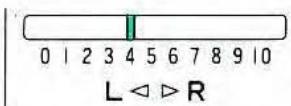


1 Needle arrangement

On KH bed set the required number of needles to B position using a 2×2 needle pusher. Next set every 2 needles on KR bed in the same manner. (Adjust the number of needles on the KH bed so that there are two needles at each end.)



Set the half pitch lever position as illustrated below so that the yarn of the first row will be cast on as illustrated.

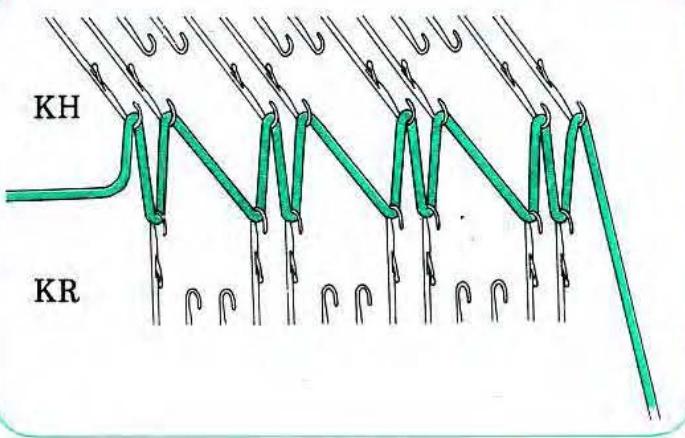


- Push this needle from A to B position

★ Move the carriage 2 or 3 times gently over the needles to align them, finishing with carriage on the right-hand side.

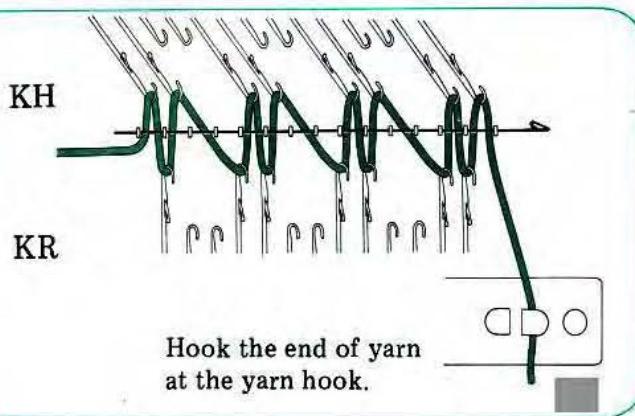
2 Casting on

Thread the yarn into the yarn feeder. (Refer to 1x1 rib.) Operate the carriage to the left ←. The yarn will be hooked in the needles on both beds as illustrated.



③ Cast-on comb

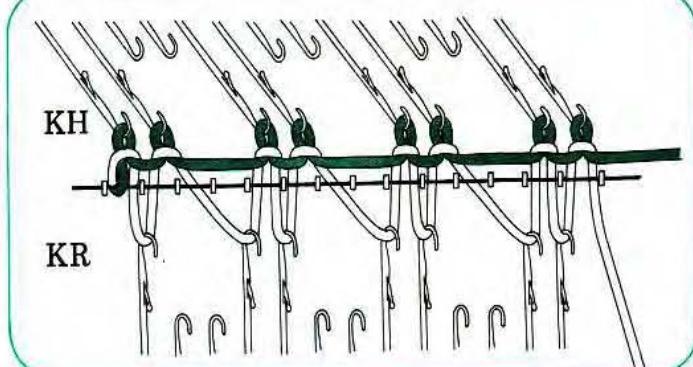
Remove the wire from the cast-on comb. Holding it with the teeth towards you and being careful to keep it balanced, insert the teeth through the yarn cast on in zigzag manner. Replace the wire.



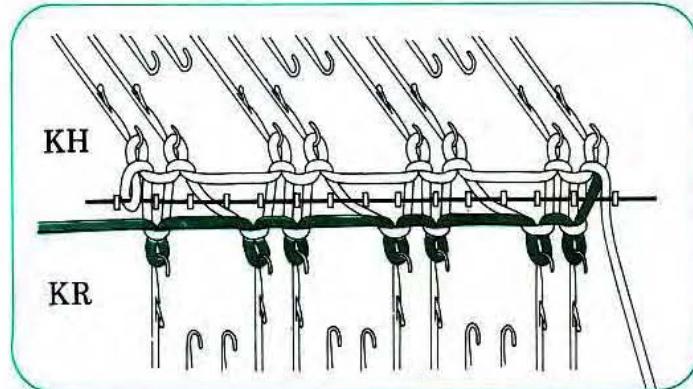
- ④ Hang the standard number of weights for the number of stitches onto the cast-on comb. (Two big weights for 50 – 100 stitches) Check comb hangs level.

- ⑤ Finished edge by circular knitting. Set the carriages as illustrated by the diagram.

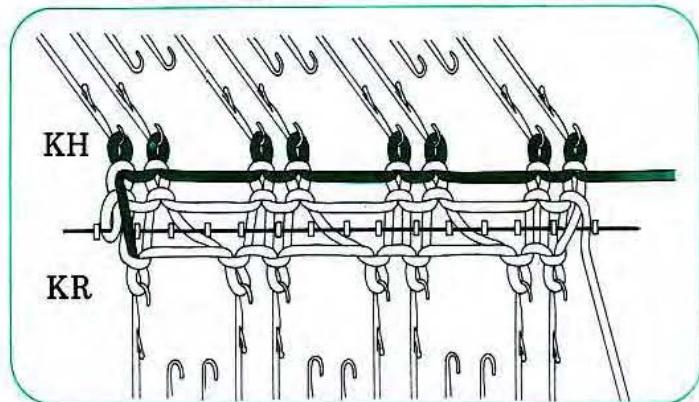
- ① Move the carriage to the right → to knit on KH only.



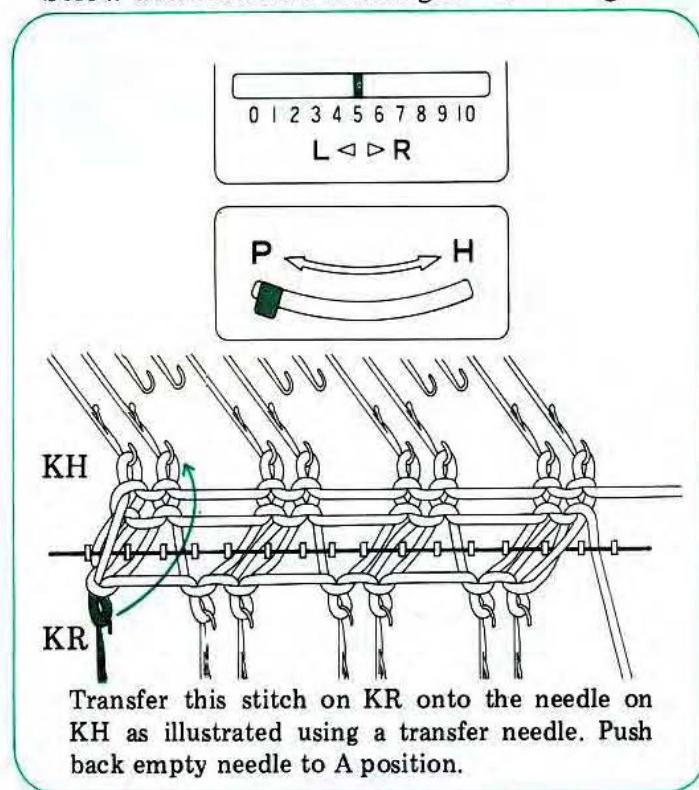
- ② Move the carriage to the left → to knit KR only.



- ③ Move the carriage to the right → to knit KH only.

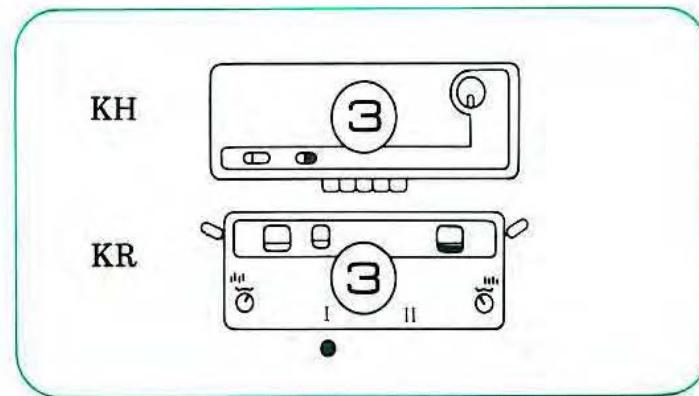


- ⑥ After working the finished edge cast-on with circular knitting, reset the machine as the diagram below and continue knitting 2 × 2 ribbing.

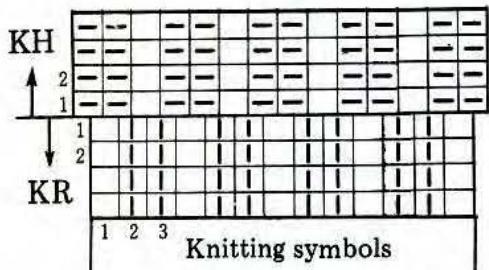


● How to knit

Set the carriages as illustrated and move the carriage back and forth to knit 2x2 rib.

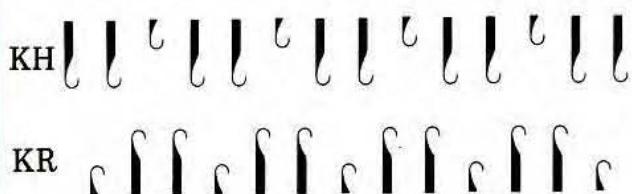
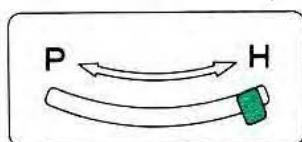
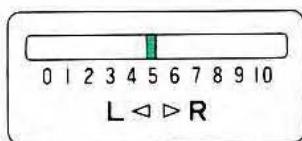


● 2x1 rib needle arrangement

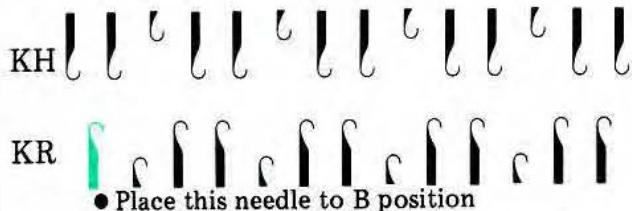
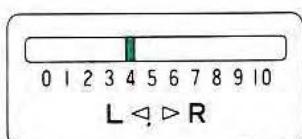


① Needle arrangement

Set the racking indicator on No.5 and the half pitch lever at H, then arrange the needles in B position.



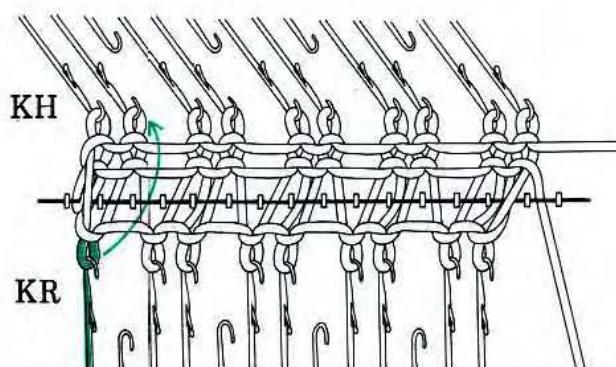
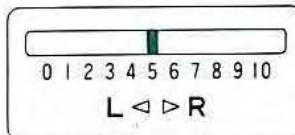
In order to have the yarn cast on alternately on the hooks change the setting as illustrated below.



● Place this needle to B position

② – ⑤ For casting-on refer to 2 x 2 rib.

⑥ After the finished edge cast-on with circular knitting is completed, re-set the racking indicator at No. 5.



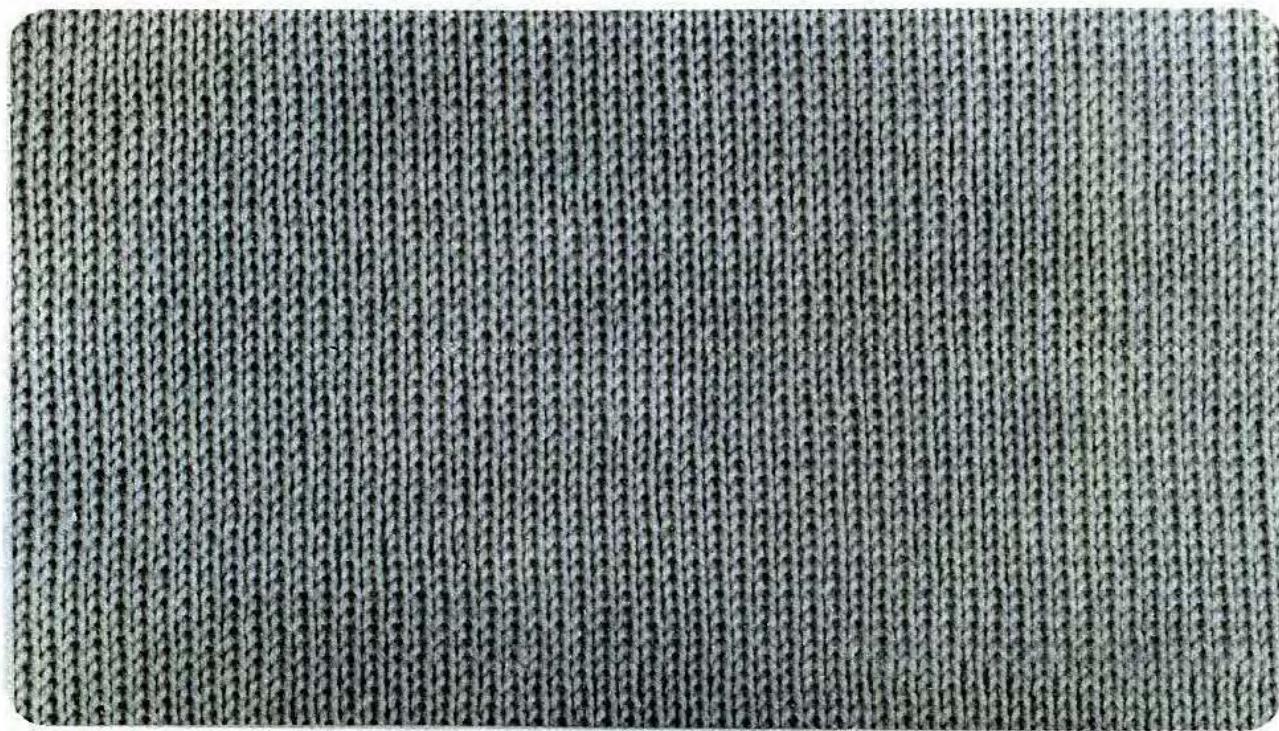
Transfer this stitch on KR onto the needle on KH using a transfer needle. Push back the empty needle to A position.

● How to knit

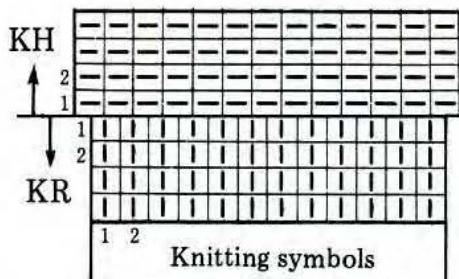
See 2 x 2 rib.



3 Full needle rib (Best for fine yarns)

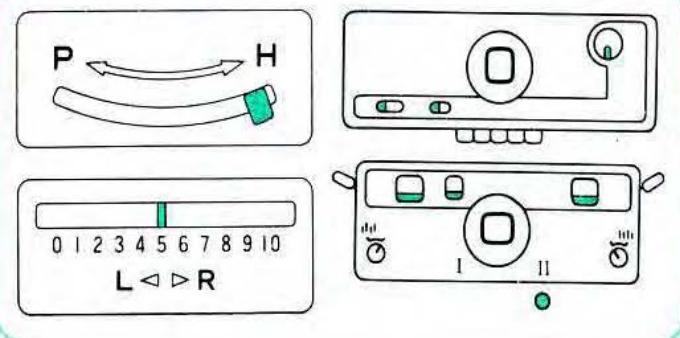


Full-needle rib is worked using every needle on KH and KR. Half pitch lever to H. The stitches are very close together and have high elasticity. They are widely used for collars, cuffs, etc.



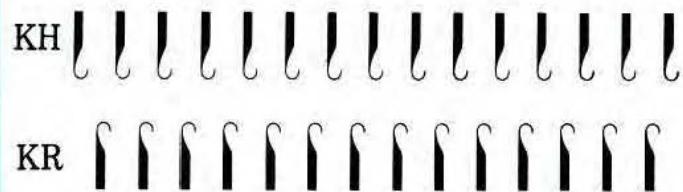
Casting on (Fine Yarn)

Set the machine and carriages as illustrated by the diagram below.



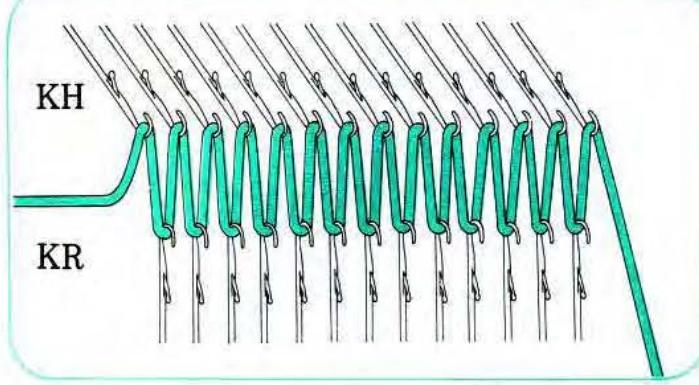
Needle arrangement

Set the required number of needles on each bed at B position as illustrated below.



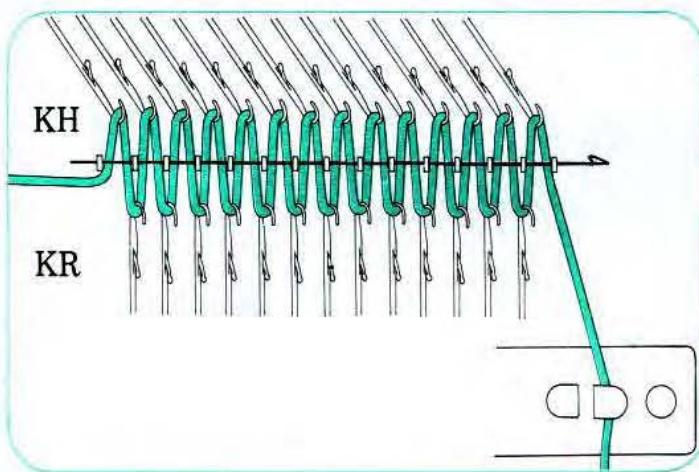
② Casting on

Thread the yarn into the yarn feeder and move the carriage to the left →.



③ Hang the cast-on comb

Hang on the cast on comb same as for 1x1 rib.

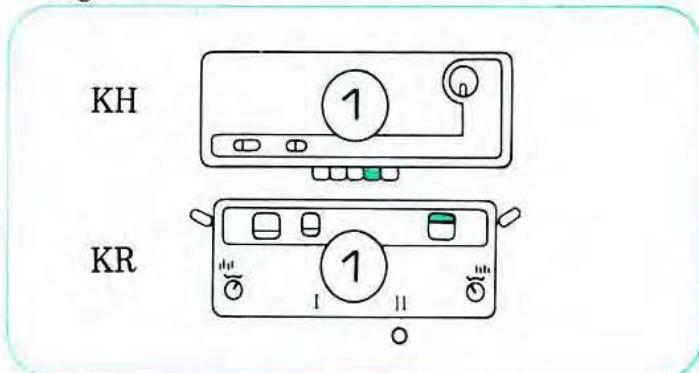


④ Hang on weights.

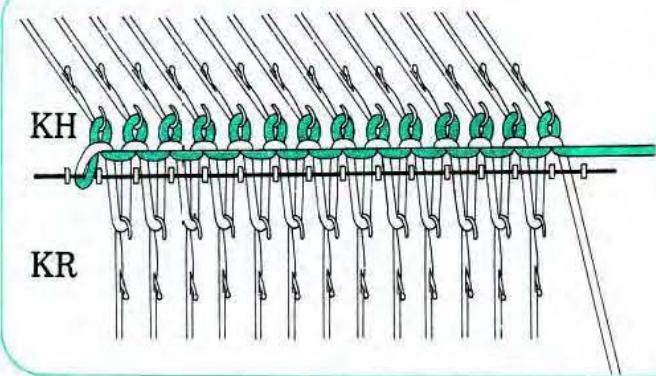
Use weights (for 50 – 100 stitches two large weights). Check comb hangs evenly.

⑤ Finished edge

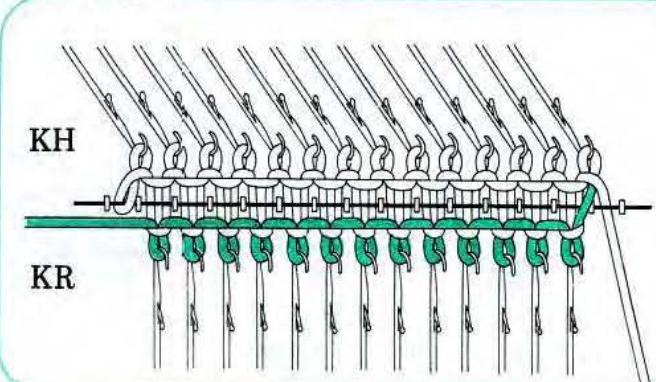
Set the carriages as illustrated by the diagram below. Work the finished edge by circular knitting.



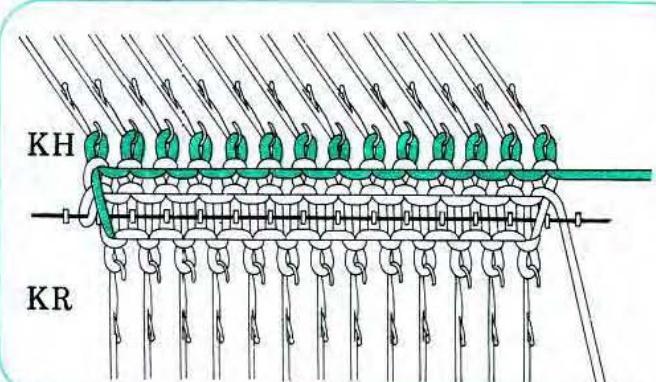
① Move the carriage to the right → The needles on KH only knit.



② Move the carriages to the left ← The needles on KR only knit.

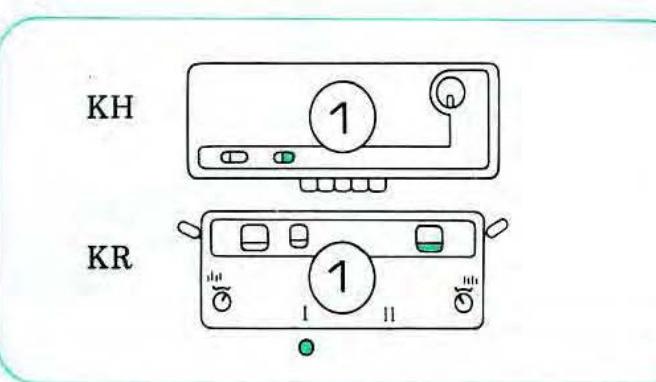


③ Move the carriage to the right → The needles on KH only knit.

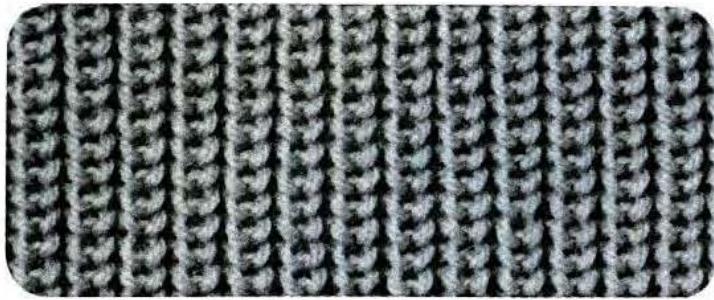


* The above operations complete the finished edge cast-on with circular knitting.

Set the carriage as illustrated below and move the carriage back and forth to knit full needle rib.



4 English rib (Suitable for medium yarns)



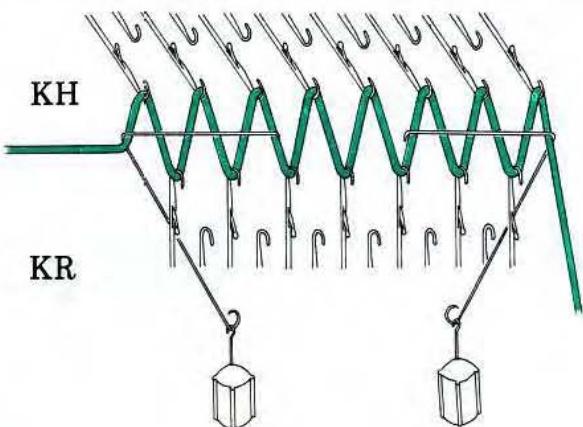
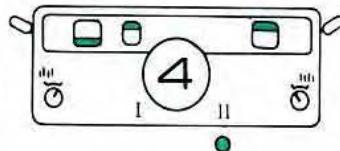
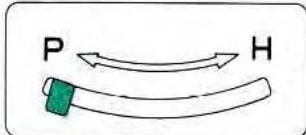
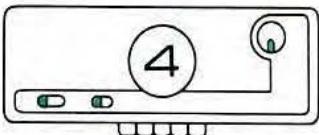
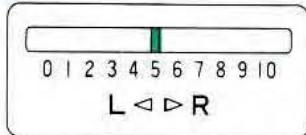
It is possible to tuck on either of the KH or KR beds. This stitch bulks the fabric and is very suitable for men's and ladies' sweaters and cardigans.

KH	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-
2	U	U	U	U	U	U	U	U	U	U
1	U	U	U	U	U	U	U	U	U	U
1	2									

Knitting symbols

How to knit

Set each part of the machine and carriages as illustrated by the diagram and knit.



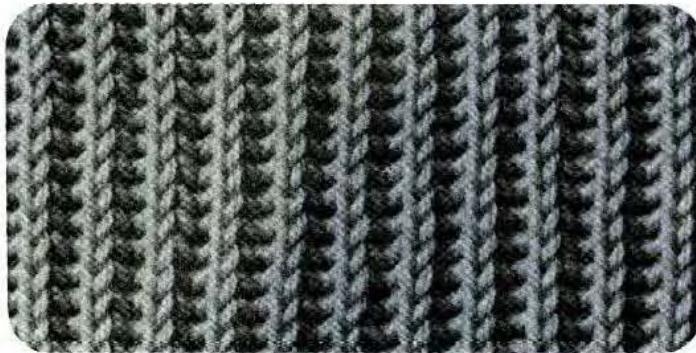
Start knitting (medium yarn.)

From casting on to the finished edge to the same as given for 1x1 rib.

*When you work tucked rib patterns use the wire-loop type weight hanger on each side.



5 Fishermans rib



The Fishermans rib stitch is created by tucking on both beds on alternate rows (see diagram). Both sides of the fabric look the same. By working in stripes it is possible to have a very interesting fabric. Ideal for sweaters and jackets.

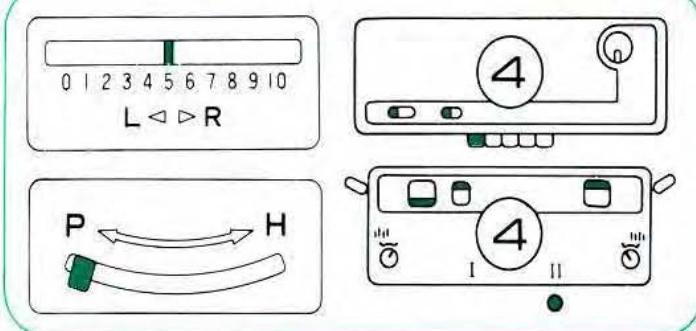
KH	-	-	-	-	-	-	-
	2	2	2	2	2	2	2
	1	1	1	1	1	1	1
	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
KR	-	-	-	-	-	-	-
	1	1	1	1	1	1	1
	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
Knitting symbols							

● Start knitting (medium yarn)

Work a finished edge cast-on with circular knitting as for 1 x 1 rib.

● How to knit

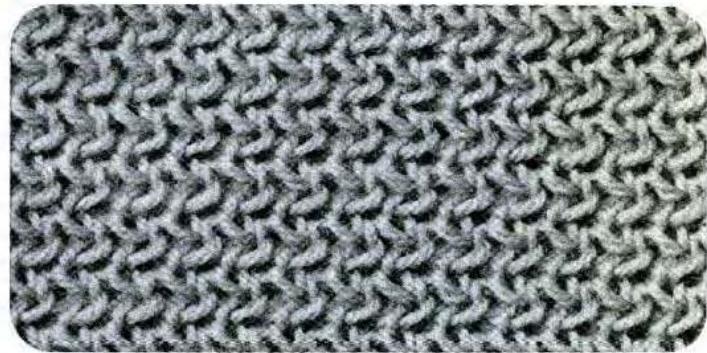
Set the machine and carriages as illustrated below. Operate the carriage back and forth to knit Fishermans rib.



To work tuck stitches on Push Button Machine

With KH-588 and KH-710 push button machines, push end needle to E position.

6 Racking Pattern of English rib



This is simply the English Rib stitch but racked as well. The fabric tends to be quite rigid and is best for coats and jackets.

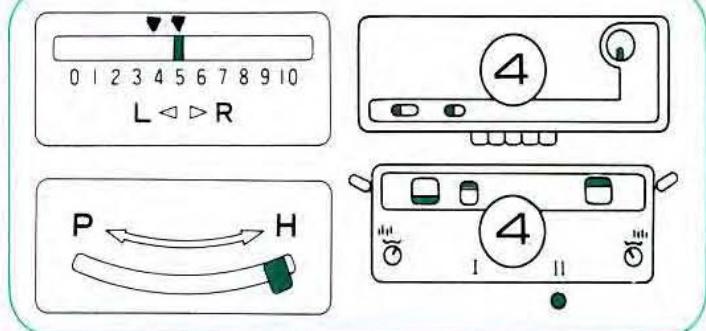
KH	-	-	-	-	-	-	-
	3	3	3	3	3	3	3
	2	2	2	2	2	2	2
	1	1	1	1	1	1	1
	1	1	1	1	1	1	1
KR	-	-	-	-	-	-	-
	4	4	4	4	4	4	4
	3	3	3	3	3	3	3
	2	2	2	2	2	2	2
	1	1	1	1	1	1	1
Knitting symbols							

● Casting on (medium yarn)

Work a finished edge cast-on with circular knitting as for 1 x 1 rib.

● How to knit

① Set the machine and carriages as illustrated below.



② Move the carriage to the left ←.

③ Move the carriage to the right →. (Only the needles on KH knit. The needles on KR catch the yarn over the stitches of the previous row).

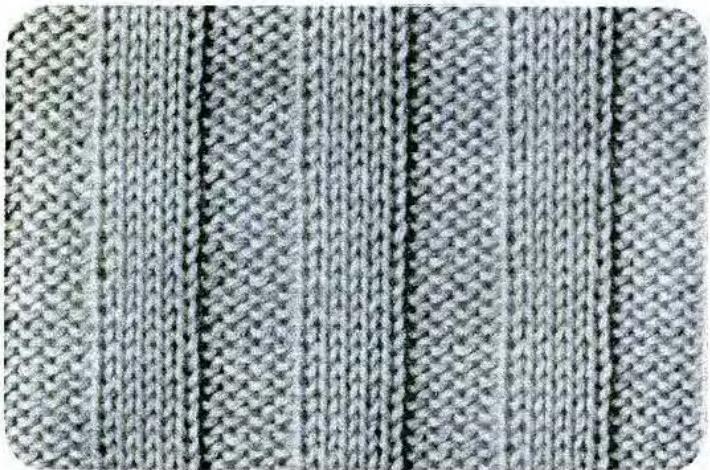
④ Rack the racking grip handle 1 pitch to the right. Racking indicator is at No. 4. Be sure to rack only when the KR needles have yarn caught over them.

⑤ Knit 2 rows. (3rd and 4th rows)

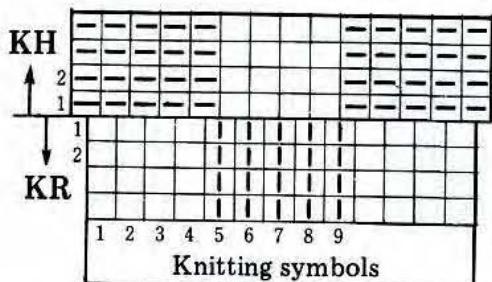
⑥ Rack the racking grip handle 1 pitch to the left. Racking indicator at No. 5.

⑦ Repeat from (2) to (6).

7 5×5 rib



This pattern is a wide rib consisting of 5 plain and 5 purl stitches vertically across the work. It is effective for sweaters, hats, scarves, etc.

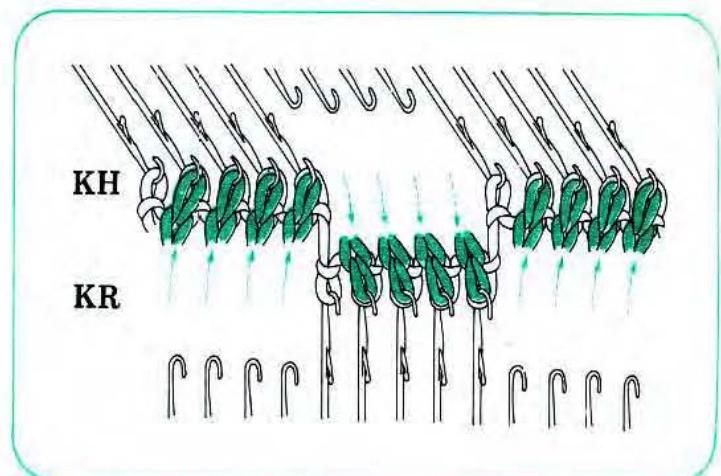


How to start knitting (fine yarn.)

Cast on the same as full needle rib.

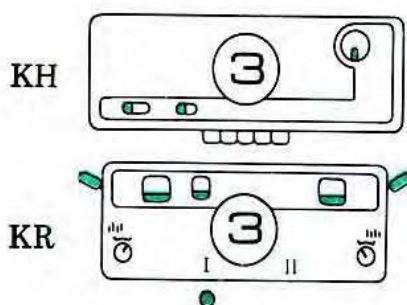
Needle arrangement for 5×5 rib.

After circular cast-on, transfer stitches to KH as illustrated. Push empty needles to A position.



How to knit

Set the carriages as shown in the diagram below and move the carriage gently back and forth to knit.



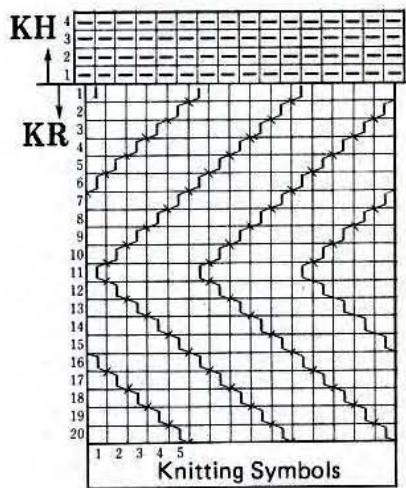
★For 5 × 5 rib be sure to set the Slide Lever at I.



8 Racking pattern (1) —— 1 pitch racking

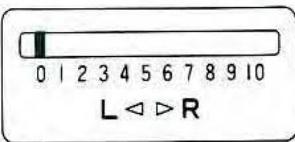


Above pattern is worked by racking KR bed 1 pitch every row. It makes a fabric of a comparatively soft feel. This fabric is attractive if used horizontally or vertically and lends itself to skirts, sweaters and dresses.



● How to start knitting (fine yarn)

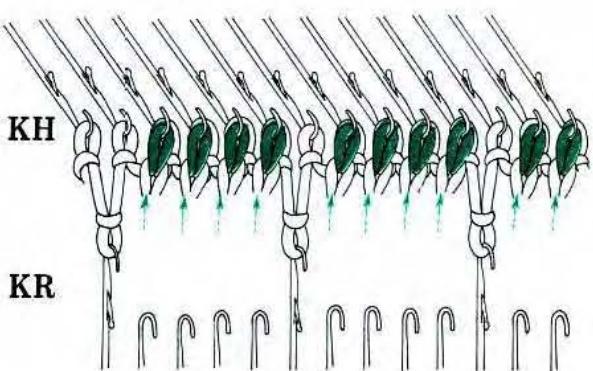
① Set the racking indicator at 0.



② Work circular cast-on edge as full needle rib.

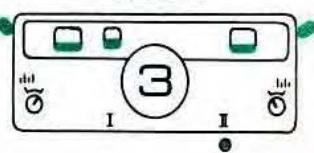
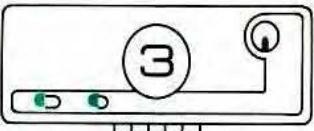
③ Needle arrangement for racking pattern

Refering to the chart of knitting symbols transfer the stitches on KR onto the needles on KH. Push the empty needles to A position.

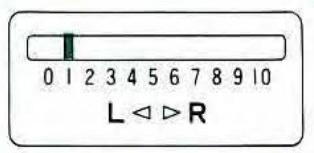


● How to knit

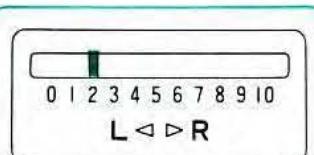
① Set the carriage as the diagram.



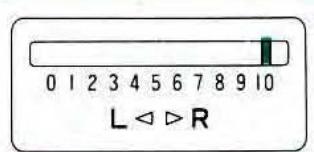
② *Move the carriage to the left ←, and turn the racking grip handle 1 pitch to the left. (The racking indicator is at 1.)



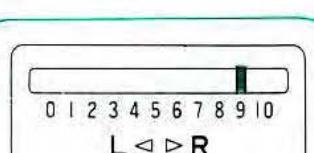
③ Move the carriage to the right → and turn the racking grip handle 1 pitch to the left.*



④ Repeat from * to * until racking indicator is at 10.



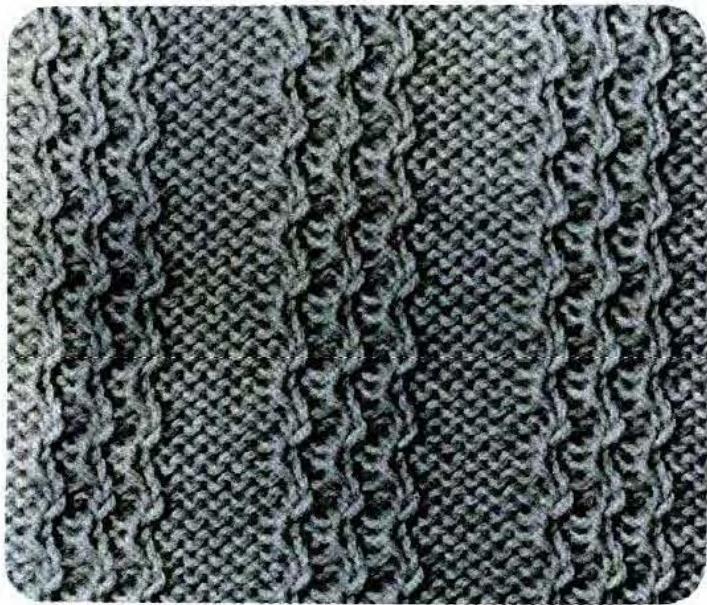
⑤ Move the carriage to the left ← and turn the racking grip handle 1 pitch to the right. (Rack indicator is at 9.)



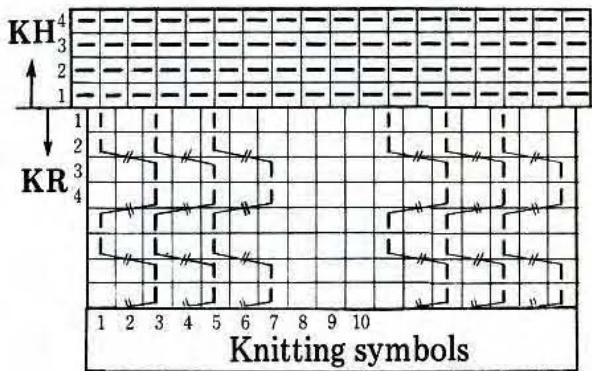
⑥ Repeat (5) above until the racking indicator is back to 0 again.

★ Above operations complete one racking pattern.

Racking pattern (2) —— 2 pitch racking

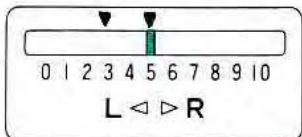


Above pattern stitches are worked by racking the KR machine 2 pitches in alternate directions. This makes a very interesting textured pattern.



● How to start knitting (fine yarn)

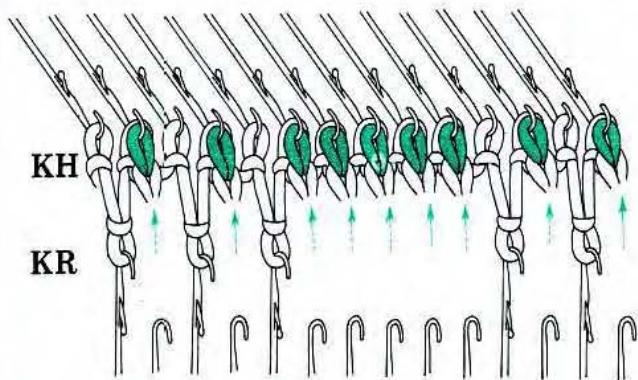
- ① Set the cursors to 3 and 5 and racking indicator at 5.



- ② Work finished edge cast-on with circular knitting as for full needle rib.

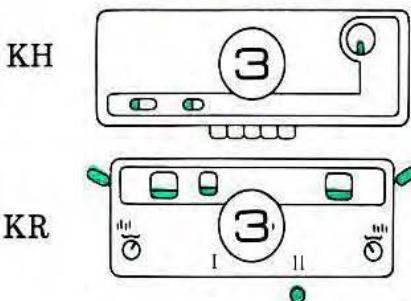
③ Needle arrangement for racking pattern

According to the knitting symbols transfer the stitches on the KR onto the needles of KH as illustrated, following the direction of the arrows. Push back the empty needles to A position.



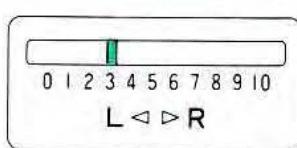
● How to knit

- ① Set the carriages as the diagram below.



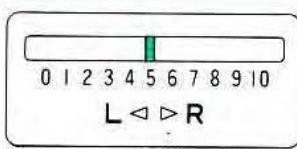
- ② Move the carriage to the left ←.

- ③ Move the carriage to the right →. Turn racking grip handle 2 pitches to the right.



- ④ Move the carriage to the left ←.

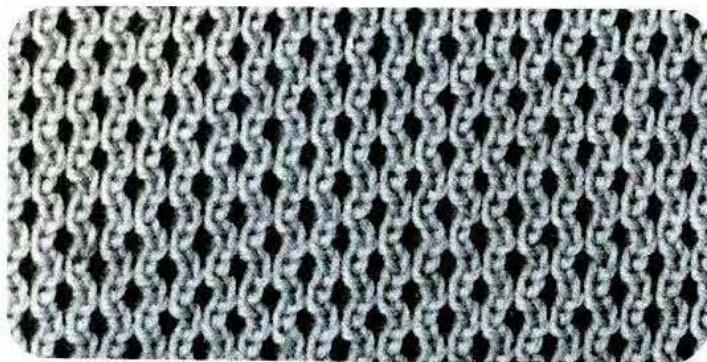
- ⑤ Move the carriage to the right and turn the Racking grip handle 2 pitches to the left ←.



- ⑥ Repeat from ② to ⑤.

10 Tucking pattern

This is a type of rib pattern worked on full needle rib or 1 x 1 rib by tucking 2 rows on KH needles. Suitable for sweaters and dresses, etc.



● Use fine yarn

Cast on and work a finished edge cast-on with circular knitting as for full needle rib.

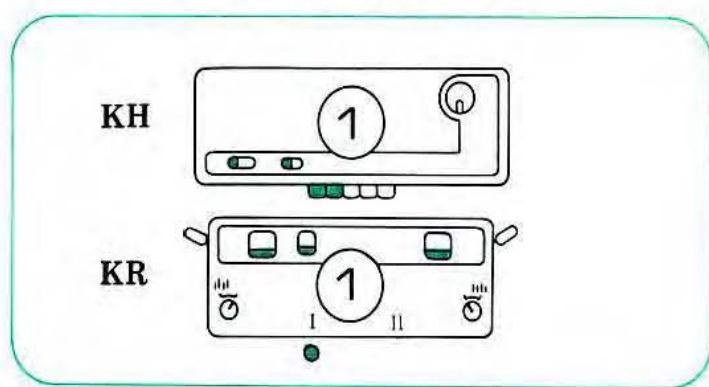
● How to knit

- ① Reset the carriages for ribbing and tension dial at 1.
- ② Move carriages to left. ←.
- ③ Insert the punchcard and lock on row 1 (● position).
- ④ Set the change knob to "KC" position.
- ⑤ Move the carriage to the right →. (Needles on KH are selected.)

★ If the first or the last needle on KH is not selected. Push it up to D position before you knit the next row.

⑥ Set card lock lever to "▼" position.

⑦ Set the carriages as diagram below.



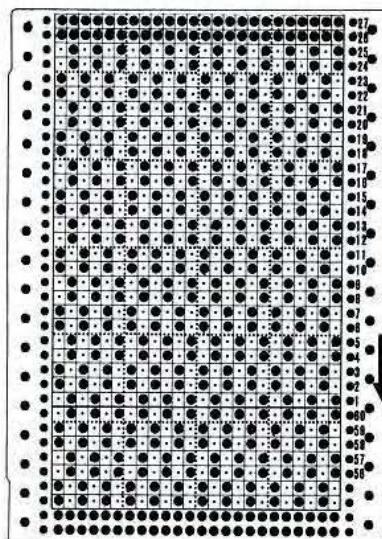
⑧ Move the carriage back and forth to knit.

Push-button machine owners

For KH-588 and KH-710 use Slide lever (1).

- ① Push needle selecting buttons 1, 3, 5, 7, on KH machine.
- ② Adjust reverse lever to "A" and pull the set lever to select the needles.
- ③ Move the carriage to the left.
- ④ Pull the set lever and select the same needles as 2.
- ⑤ Move the carriage to the right →.
- ⑥ Set the reverse lever at "B" and pull the set lever to select the needles.
- ⑦ Move the carriage to the left ←.
- ⑧ Pull the set lever and select the same needles as for 6).
- ⑨ Move the carriage to the right →.
- ⑩ Repeat from 2 to 9.

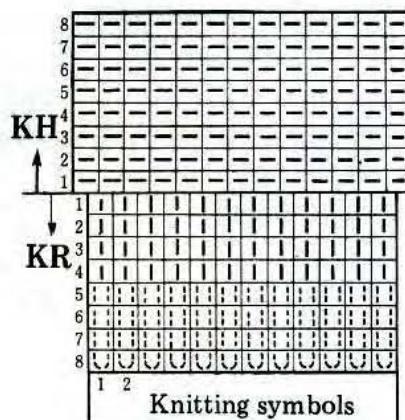
Punch Card



11 Pin tuck pattern or Ripple Stitch



Where pin tucks are desired, skip the needles on KR and knit desired number of rows for a pin tuck on KH alone. (Usually 3 – 6 rows). Then continue knitting on both beds. By repeating this you will have pin tuck pattern (or ripple stitch).

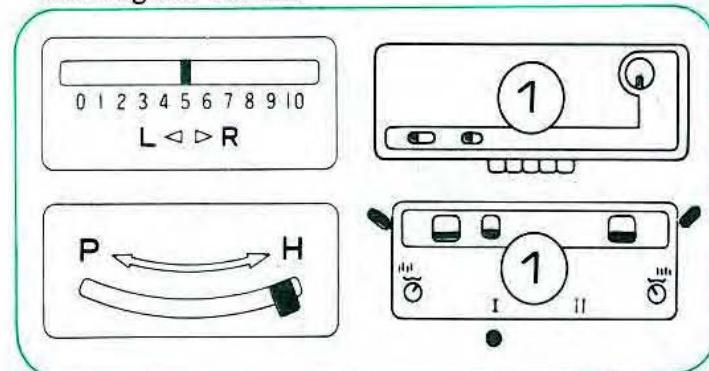


● Casting on (Fine Yarn)

From casting on to finished edge follow the instructions for full needle rib.

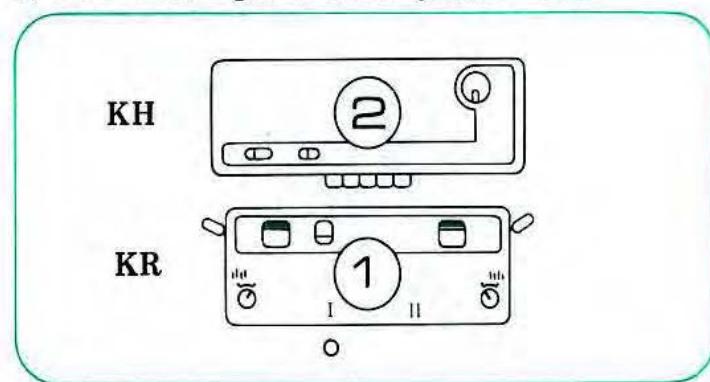
● How to knit

① Set the machine and carriages as illustrated in the diagram below.



② Knit 4 rows on both KH and KR.

③ Set the carriages as the diagram below.



④ Knit 4 rows on KH only.

⑤ Repeat from (1) to (4) for pin tucks.

11 Pin tuck pattern (1)



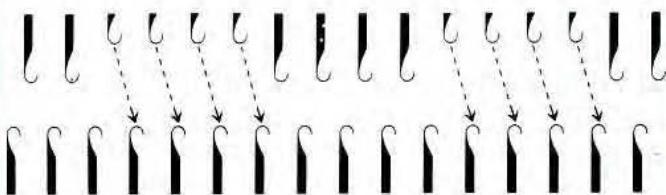
By using the punchcard it is possible to produce beautiful textured stitches suitable for large sweaters and jacket.

● Casting on (Medium fine yarn)

Work circular knitting cast on and knit 2 rows as full needle rib ending with the carriages on the right, half pitch lever to H.

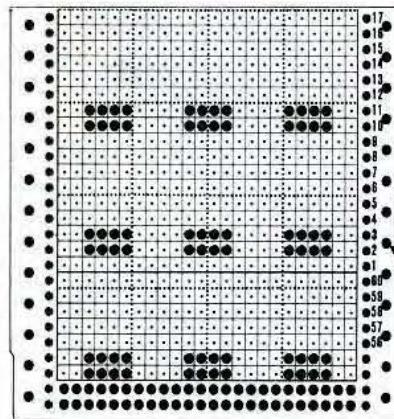
● How to knit

- ① Insert card and lock on row 1 (Card lock lever “•”). Set K-carriage to KC.
- ② Move the carriages from right to left to select the needles. Set half pitch lever to P and transfer the stitches on KH which were not selected to corresponding needles on KR.

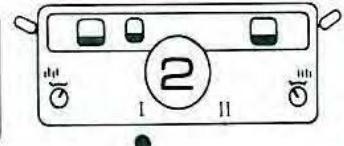
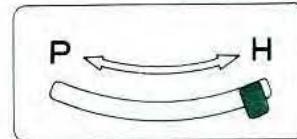
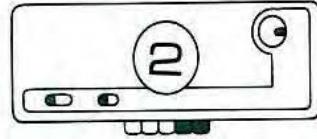
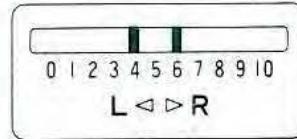


Place the empty needles in B position. (Keep 2 end Ns on KH). Return P to H.

Punch card



- ③ Set machine as diagram below.



- ④ Set the card lock lever at “▼” and knit 8 rows with racking indicator at 5. Then, needles are selected.
- ⑤ With the racking indicator at 6 knit 8 rows.
- ⑥ Change the racking indicator to 4 and knit 8 rows.
- ⑦ Continue knitting repeating (5) to (6).

Pin tuck pattern (2)



● Casting on (Medium fine yarn)

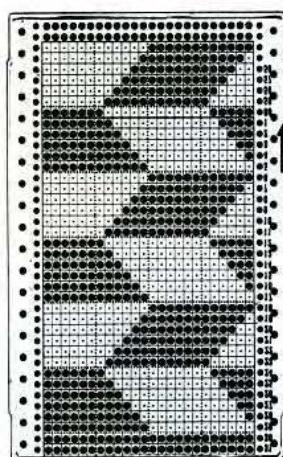
Work finished edge cast-on with circular knitting and knit about 10 rows as for full needle rib.

● How to knit

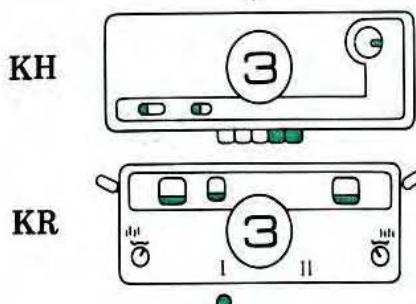
① Insert punchcard and lock on row 1. (Card lock lever “●”).

② Set K-carriage to KC, knit 1 row from right to left. The needles are selected.

Punch-card

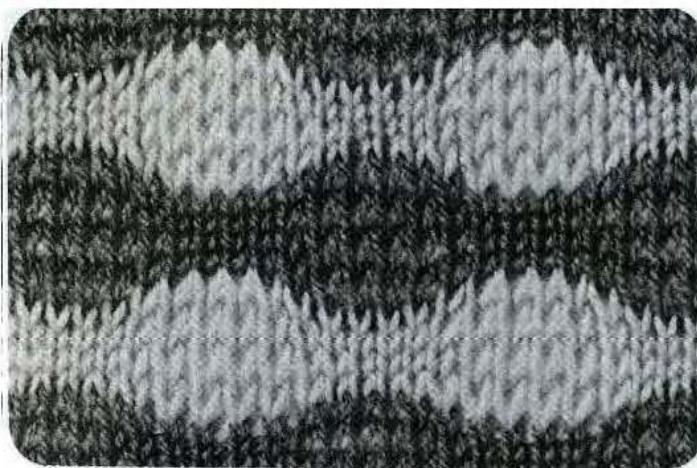


③ Set machine as shown in diagram below. Move card lock lever to ▼ and knit.

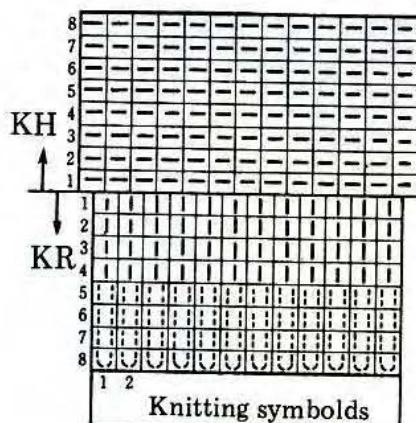


It is possible to work this design in stripes of 6 rows for an interesting effect....

12 Drop stitch pattern

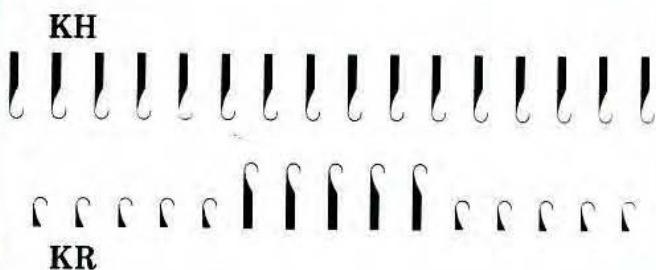


This design produces enlarged or elongated stitch loops and makes a soft fabric.

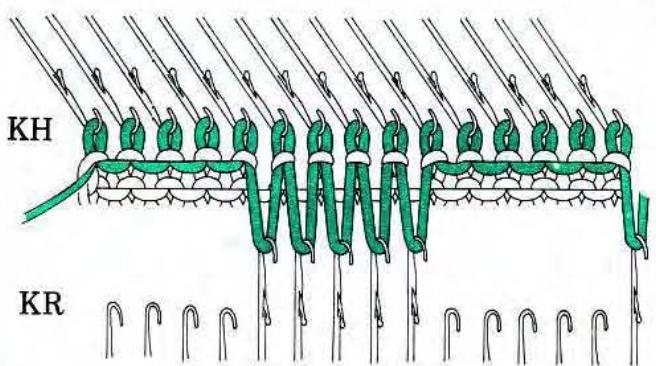


- ★ The number of needles used should be in multiples of 5 plus 1st at each end of work.
- Cast on as 1 x 1 rib ending with Carriage on the Left. Set Slide Lever to P. Transfer all sts on KR to KH.

- ② As diagram below, *push up Ns on KR to B position in groups of 5 leaving the 5 Ns between in A position. (Racking indicator is at 5.)

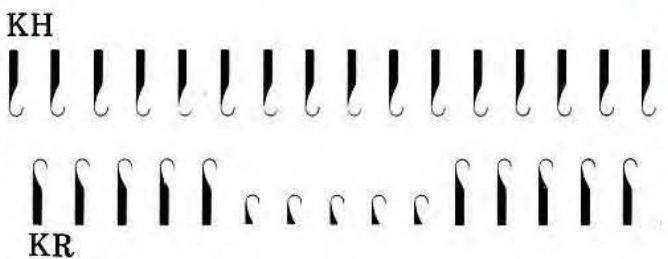


- ③ Knit 1 row (see diagram below).



- ④ Knit a further 3 rows. Push all KR Ns to E position. Take back to A position only those Ns on KR which have stitches on. The stitches are dropped.

- ⑤ Turn the racking grip handle 5 pitches to the right. (Packing indicator is at 0.)

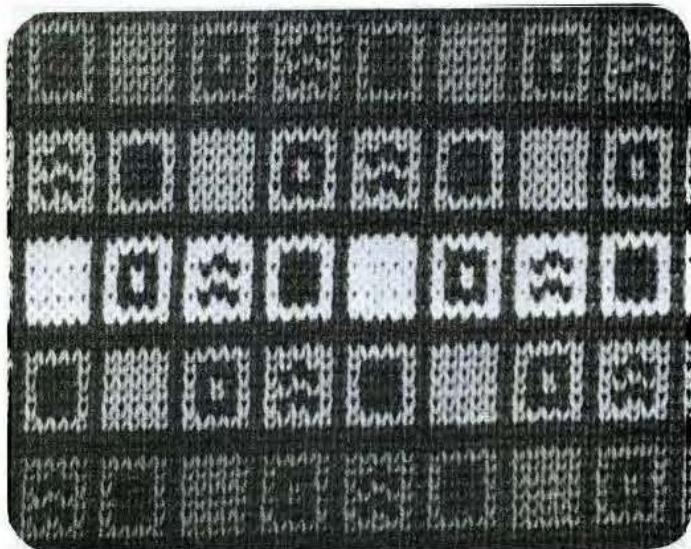


- ① Push all Ns on KR to A position. Set KH and KR carriage as above.

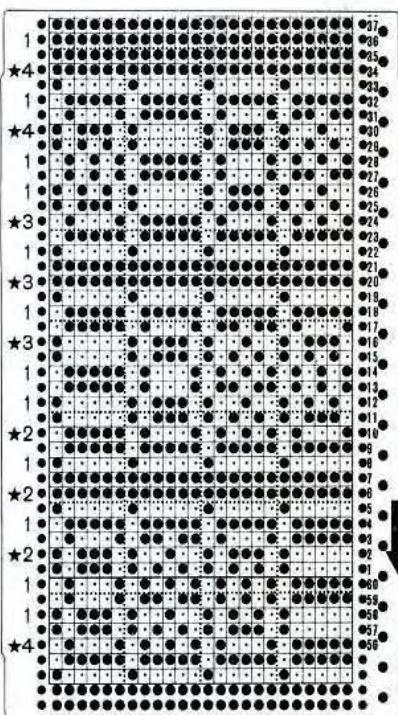
- ⑥ Knit 4 rows and take back to A position only those Ns on KR which have stitches on.*

Repeat from * to *.

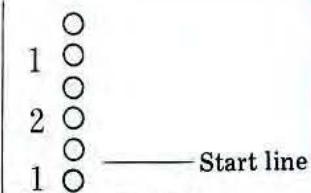
13 Multi-coloured Rib pattern



For multi-coloured rib patterns, punchcards, pattern card and colour changer are used. Unlike coloured patterns worked on KH alone, there are no yarn floats on the wrong side, so the appearance is very neat on either side.



★ Thread 3 different coloured yarns into the colour changer feeders (Nos. 2, 3 and 4) and with the No. 1 button pushed in, thread the yarn feeder with the basic colour.

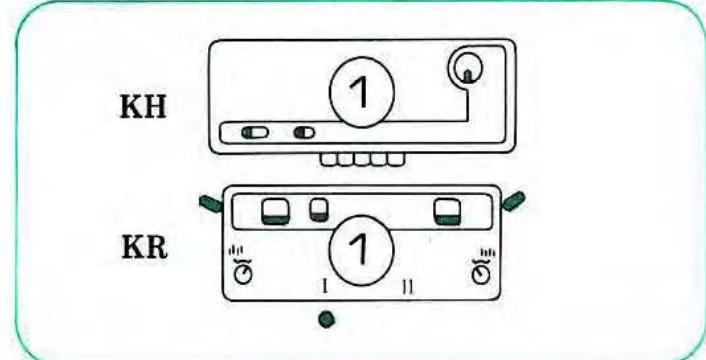


● Casting on (Use medium fine yarn)

Make a finished cast-on the same as for full needle rib.

● How to knit

- ① Set the carriage as illustrated by the diagram below. Knit a row from right to left. Leave the carriage on the left side.



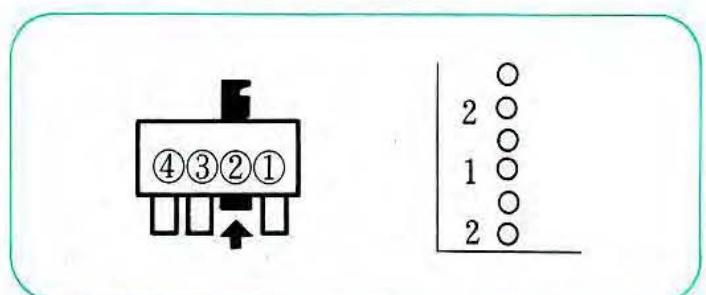
- ② Insert the punchcard and set it to the start position and the card lock lever at "●".

- ③ Set the change knob on KH carriage to "KC" position and operate the carriage to the right to select the needles.

- ④ Change the card lock lever to "▼" position and push both "PART" buttons, continue to knit.

- ★ With 850 machine, set both cam levers at "P.R" position and at the same time set both KR change knobs and slide lever at mark.

- ⑤ When you change colour, move the carriage towards the changer until you hear a click. Then push in the button of the number indicated at the left side of the punchcard.



- ⑥ After one movement back and forth of the carriages, the selected needles knit in 2 colours and other new needles are selected. By repeating (5) and (6) coloured patterns are worked.

- ★ Should the patterns not come out as in the picture, but just make stripes, check the card is not one row mispositioned or a part button is not pushed in. Check carefully and rectify any mistakes.

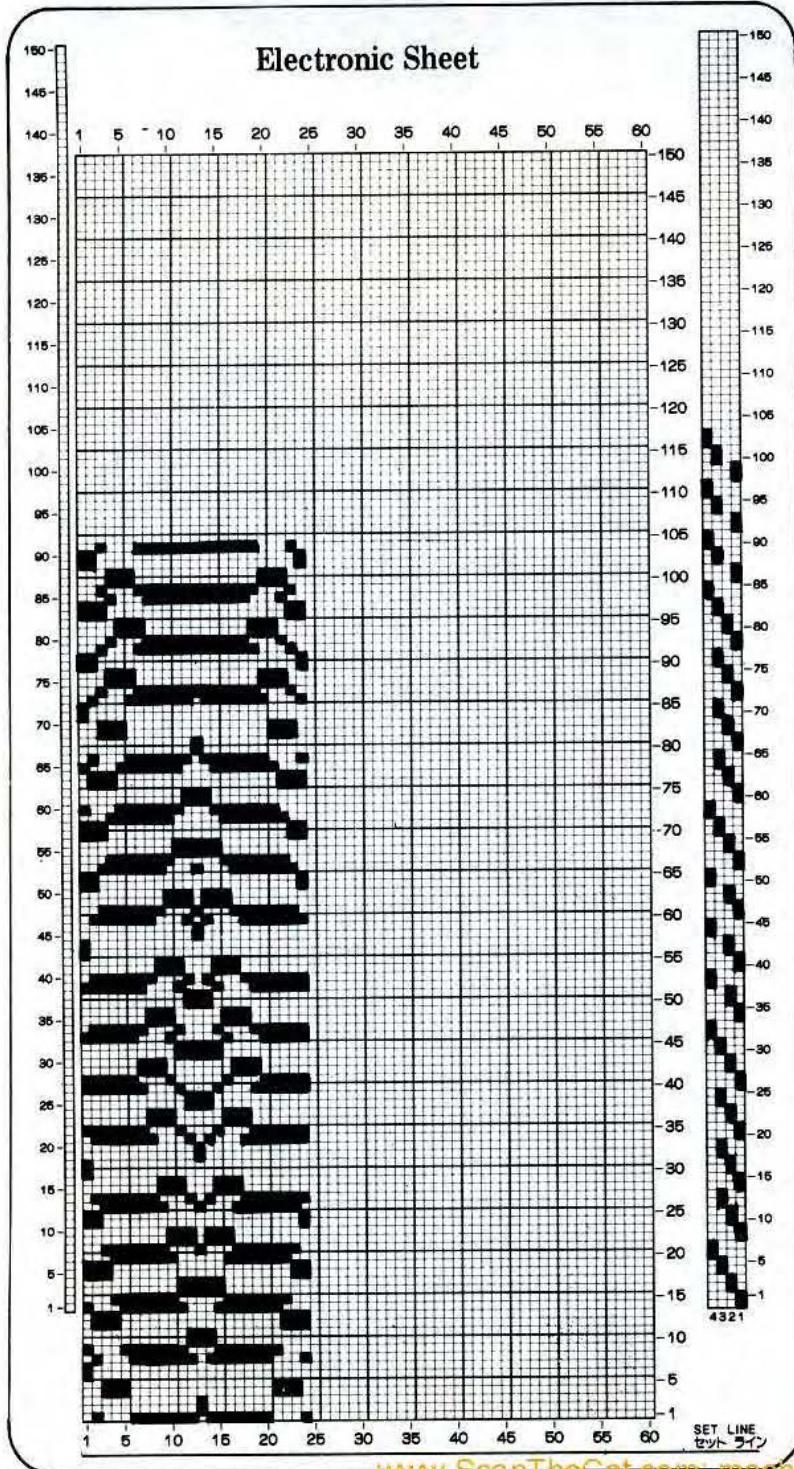


Multi-coloured (more than 2 colours) rib patterns are worked in the same manner as Rib patterns in colour in the previous chapter.

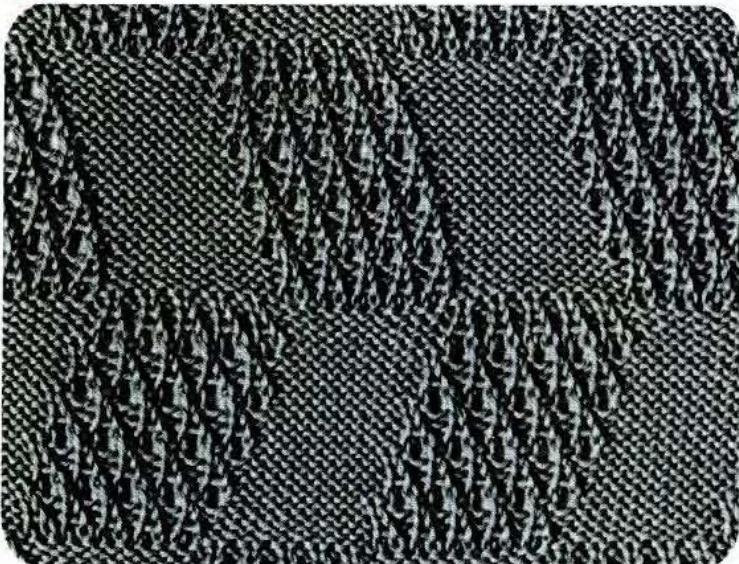
Punch Card

A 19x19 Go board diagram. The board features a grid of 361 points where stones can be placed. Black stones are present in various positions, including a large cluster in the upper-left quadrant and several smaller groups elsewhere. White stones are also scattered across the board. To the right of the board, a vertical legend lists numbers from 1 to 104, each associated with a specific pattern of dots and a small circle, likely representing different Go terms or concepts.

Electronic Sheet

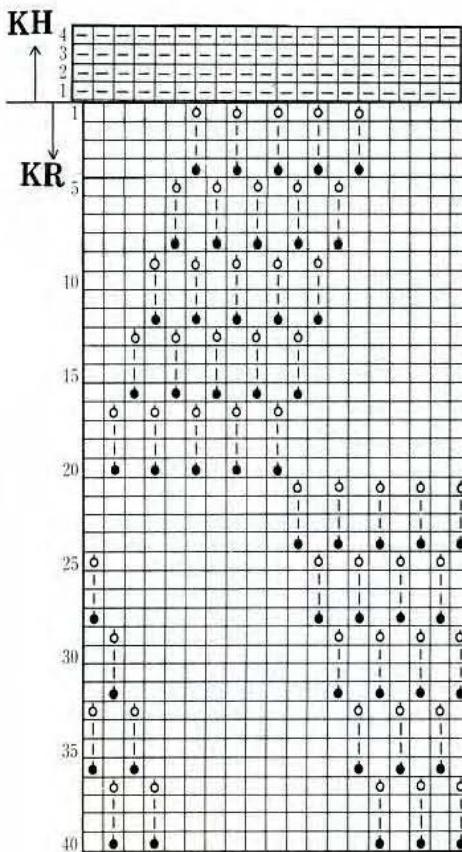


14 Relief pattern



Transfer-carriage is used to transfer the stitches from KR to KH.

Relief patterns are worked by transferring stitches from KR onto the corresponding needles on KH. A Transfer carriage (sold separately) which enables the stitches to be transferred in one operation, is used. To operate transfer carriage refer to the instruction manual supplied with the attachment.



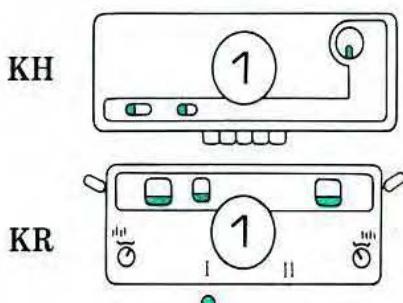
● Casting on (medium fine yarn)

Make a finished edge cast-on as for full needle rib.

● How to knit.

① Set the carriages as the diagram below. Knit 1 row.

The carriages are on the left side.

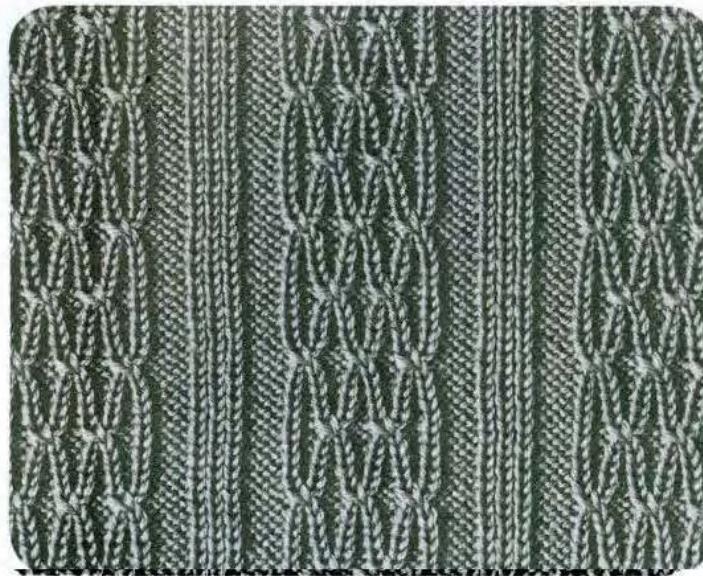


② Operate the Transfer Carriage from righthand side to transfer all the stitches on KR to KH. Push down the empty needles to A position.

③ Referring to the diagram, arrange the relevant needles on KR in B position. Knit 4 rows.

④ Operate the Transfer Carriage from righthand side to transfer the stitches on KR to KH. (Push up the necessary needles first). Then push down the other empty needles to A position. Repeat (3) and (4).

15 Cable stitches



By the needle arrangement on KH and KR, and by adding manual work or crossing the stitches, you can knit many different designs.

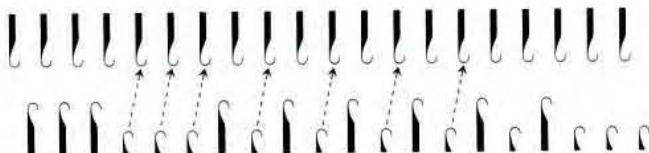
● Casting on (medium fine yarn)

Make a finished edge cast-on the same as for full needle rib.

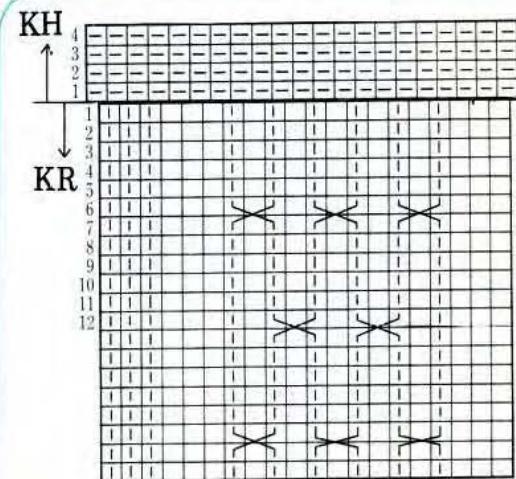
● How to knit

- ① After the edge is finished, transfer the stitches using a transfer needle onto the corresponding needles following the direction of the arrows. Push back the empty needles to A position.

KH

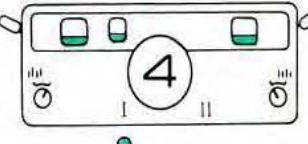
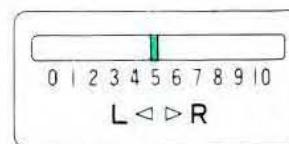
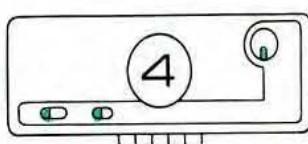
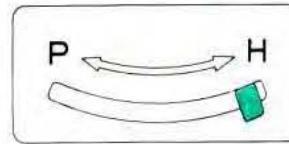


KR



Knitting symbols

- ② Set each bed as the diagram below.

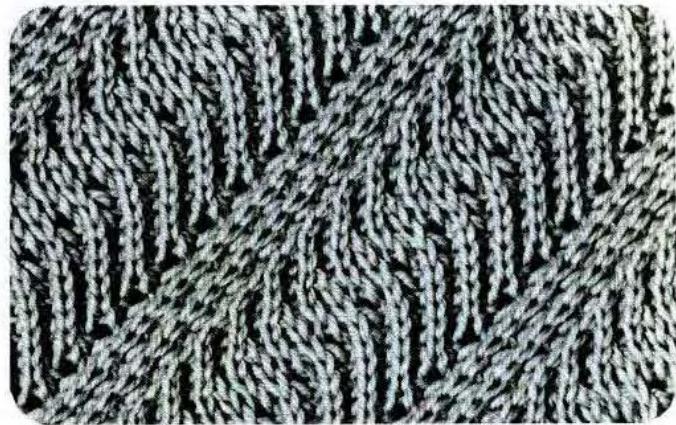
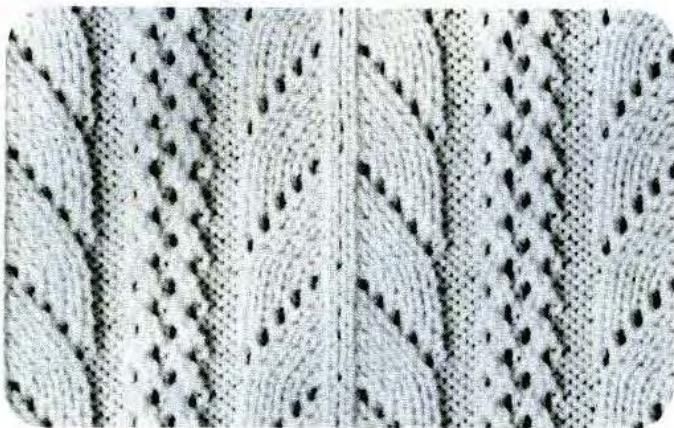


- ③ Knit 6 rows. Cross the stitches using a pair of 1 x 2 transfer tools, following the direction of the knitting symbols.

- ④ Push up the needles of the stitches just crossed to E position. (It makes the next row easier to knit).

Repeat ③ and ④ for desired length.

16 Transferred stitch pattern



By manually transferring stitches according to the knitting symbols you can work ribbed patterns and lace patterns freely on a stocking stitch ground.

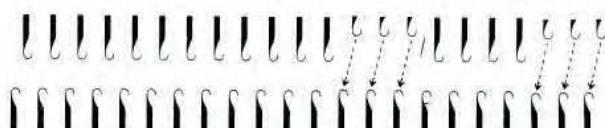
● Casting on (medium yarn.)

Make a finished edge cast-on the same as for full needle rib.

● How to knit

- ① Transfer the stitches to the corresponding needless following the direction of the arrows.
Push the empty needles to A position.

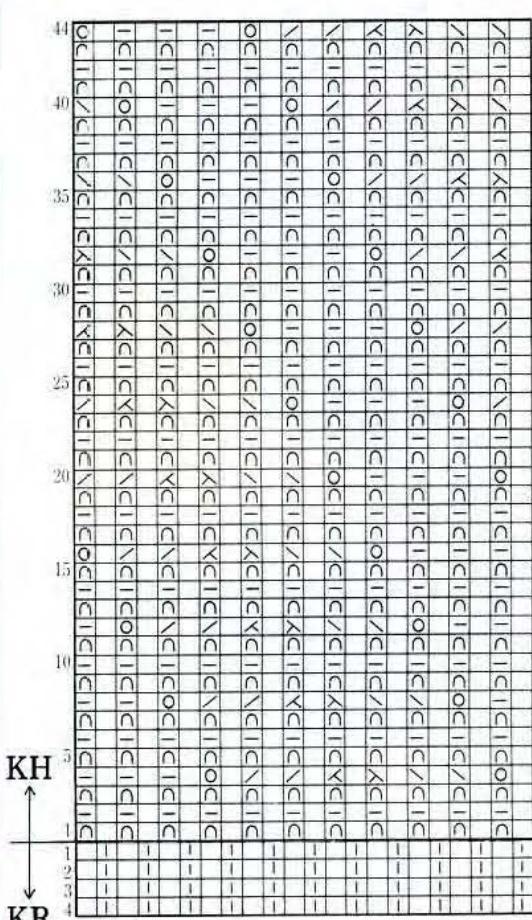
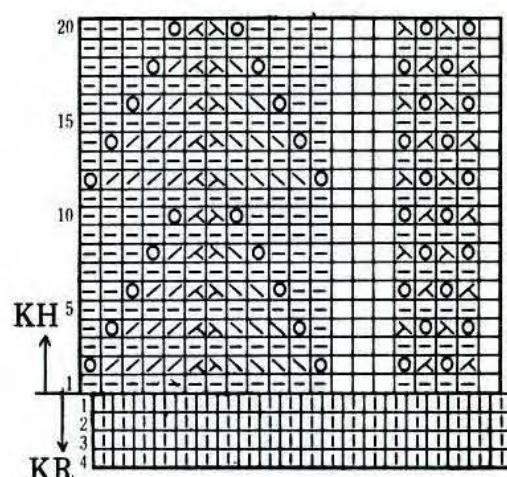
KH



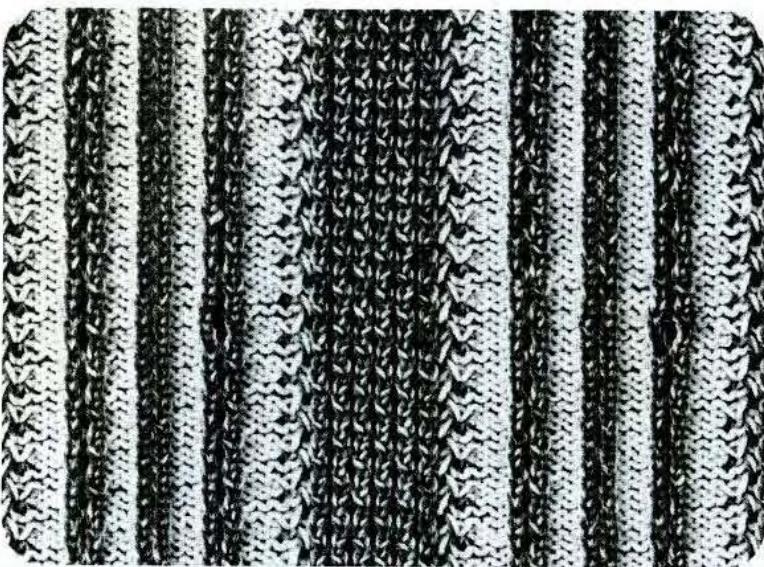
KR

- ② Follow needle arrangement as above.

- ③ Knit 2 rows. Transfer the stitches as indicated by the direction of the arrows.



17 Plating pattern (Stitch 1)



Replace the yarn feeder on the carriage with the plating yarn feeder.

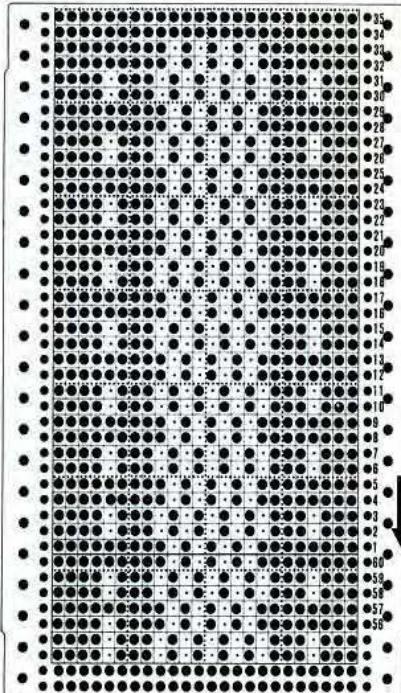
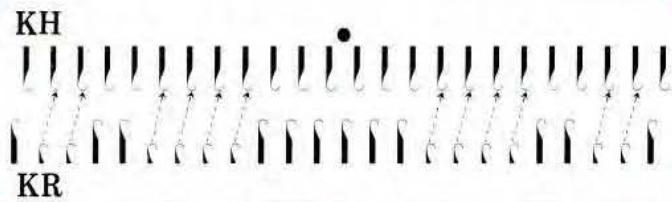
Plating knits two yarns at the same time, one on top of the other. Garments made by plating are apt to be rather stiff, so fairly fine yarns are recommended for this type of knitting.

● Casting on (Medium fine yarn)

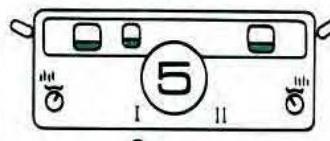
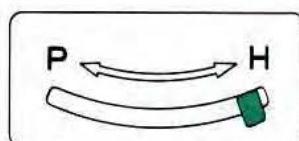
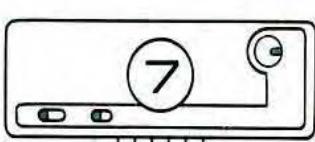
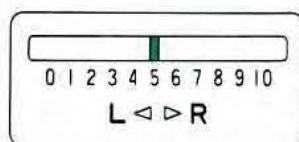
Cast on the stitches and work the finished edge by circular knitting the same as for full needle rib.

● How to knit

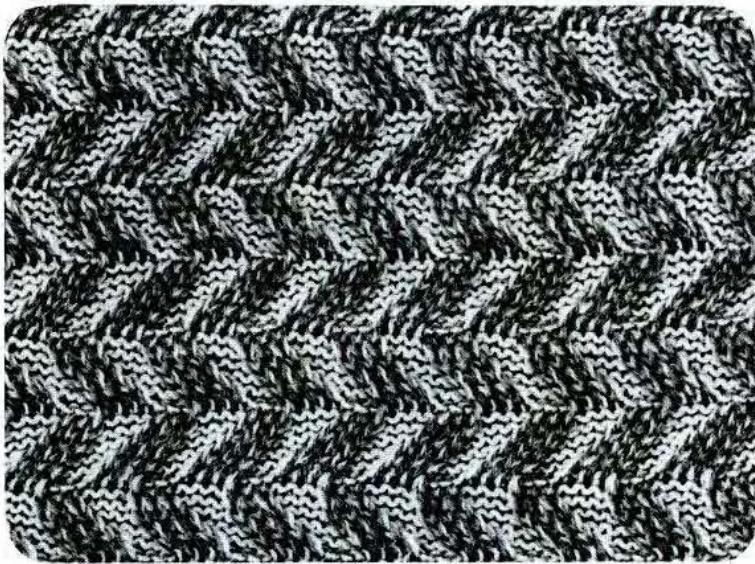
- ① Insert the punchcard and adjust the starting line. Set the card lock lever at “●”.
- ② Transfer the stitches on KR to KH needles in the direction indicated by the arrows in the diagram.



- ③ Set change knob at “KC” and move the carriages towards the right. The needles on KH are selected.
- ④ Thread the plating yarn into the plating yarn feeder. Set the card lock lever at “▼”. Set the carriages as the diagram below and knit.



Plating pattern (Stitch 2)



Replace the yarn feeder of the carriage with the plating yarn feeder.

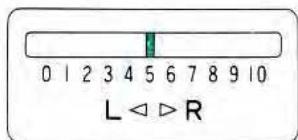
By racking KR bed for 1 pitch, unique patterns in rib knitting are worked very easily.

● Casting on—(Fine yarn)

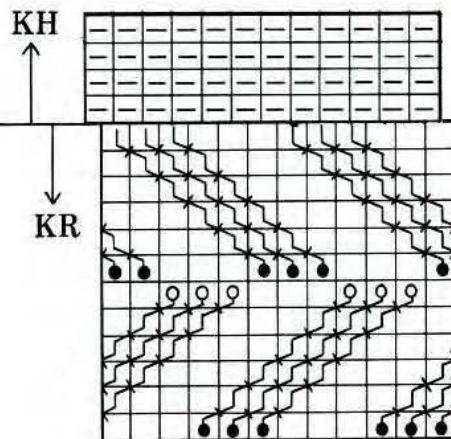
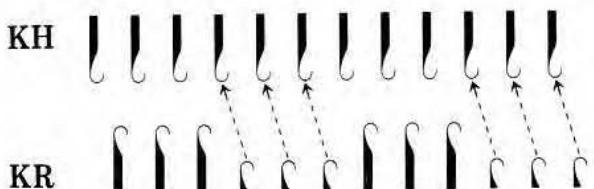
Cast on and work the finished edge by circular knitting the same as for full needle rib, ending with the carriage on the righthand side.

● How to knit.

① Set the racking indicator at 5.

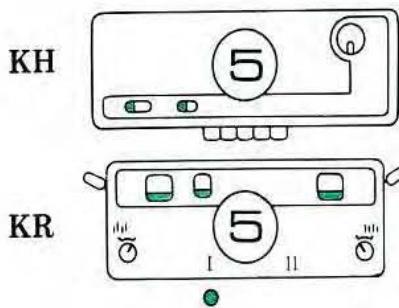


② Transfer the stitches on KR to KH needles in the direction of the arrows. Push back the empty needles to A position.



Knitting Symbols

③ Set the carriages as the diagram.



④ Knit 1 row to the left. Turn the racking handle 1 pitch to the left. (racking indicator is at 4)

⑤ Knit 1 row. Turn the racking handle 1 pitch to the left. (racking indicator is at 3) Repeat 4 and 5 until the indicator is at 0. Then transfer the stitches on KR to KH.

⑥ Following the knitting symbols place the required needles on KR to B position.

⑦ Knit 1 row. Turn the racking handle 1 pitch towards right. (racking indicator is at 2).

⑧ Once again repeat to knit 1 row and turn the racking handle 1 pitch to the right until the indicator is back to 5, 1 pattern has now been worked.

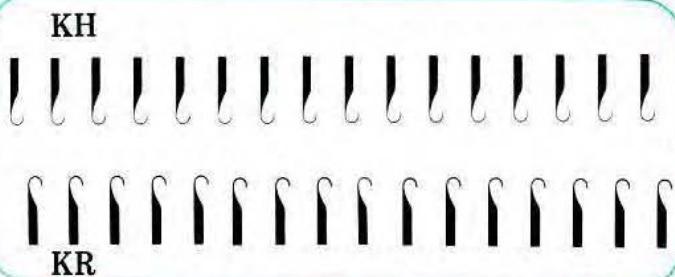
18 Circular knitting



Circular knitting is worked in a tube, having no seam. The size of the tube is adjusted by the number of needles used for it. It is used for socks, the inside bag of a pocket, strings or for waste knitting for ribbing.

KH	
KR	
1 2	Knitting Symbols

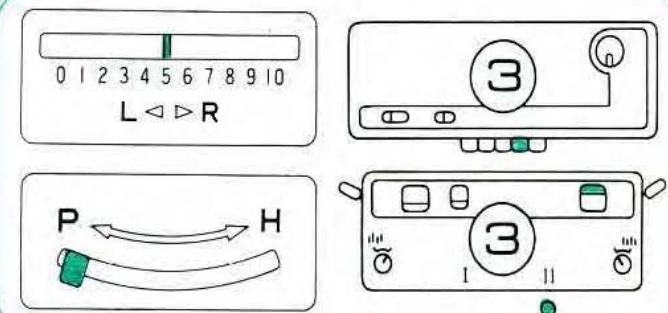
● Casting on (fine Yarn)



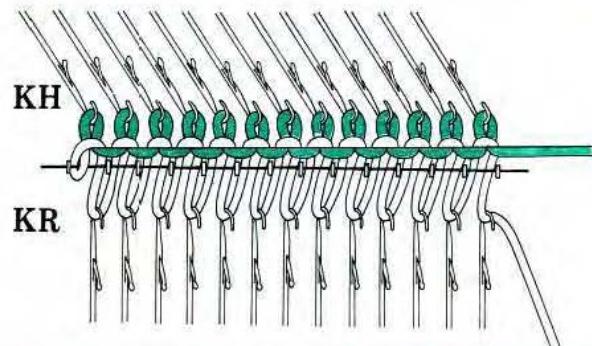
Begin knitting the same as for full needle to rib using a cast-on thread. Hang cast-on comb weights.

● How to knit

- Set the machine and carriages as illustrated by the diagram below.

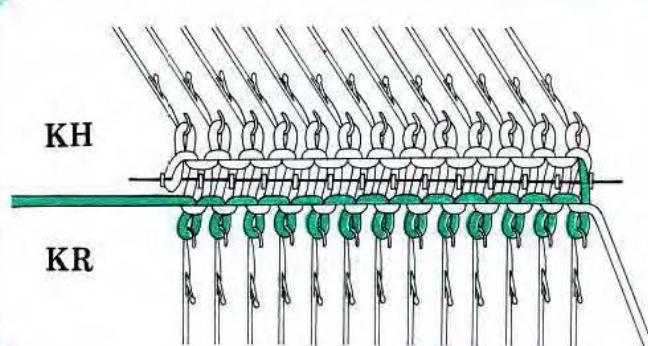


- Operate the carriage to the right to knit on KH only.



- Operate the carriage to the left to knit on KR only.

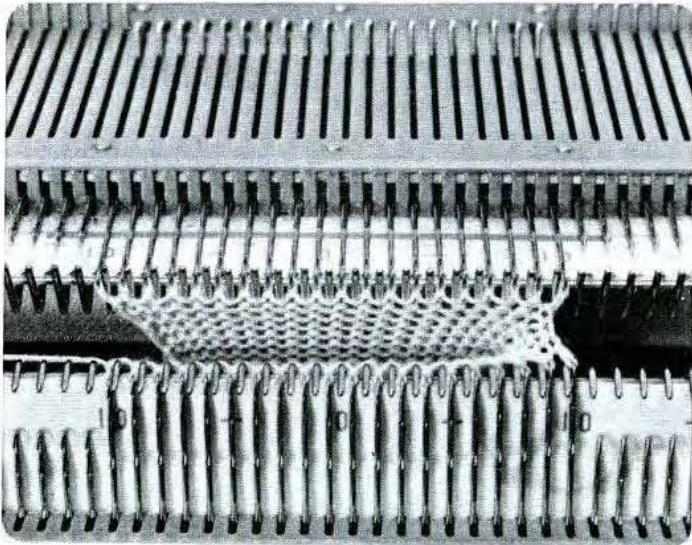
(Both KH and KR needlebeds knit one row).



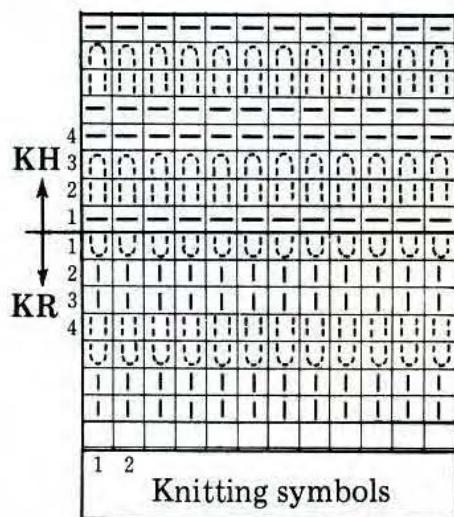
- Continue knitting.

Before you begin any garment, make a sample piece and check both beds knit to the same tension. If they do not, adjust the tension dial on KR carriage.

19 U Style knitting

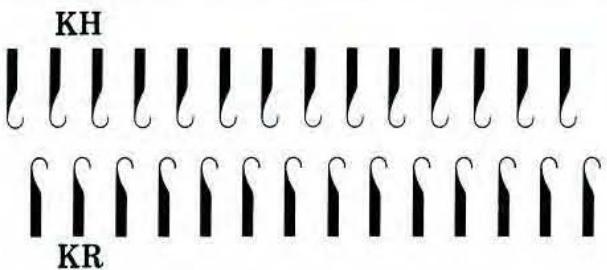


U-style knitting is tubular knitting with one side open. It is useful when working a design which requires a width of more than KH 200 stitches, also for waste knitting to finish ribbed garments, as the stitches can be clearly distinguished by this method.



★ Here you will have left side open.

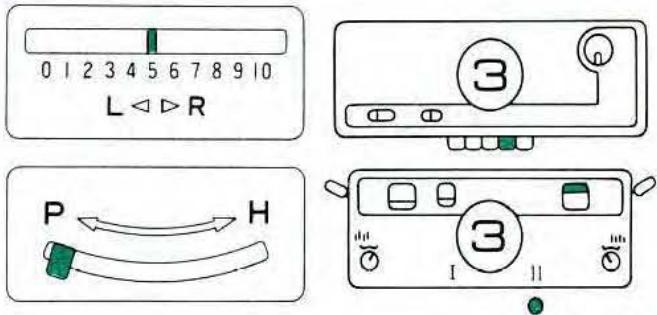
● Casting-on (medium fine yarn)



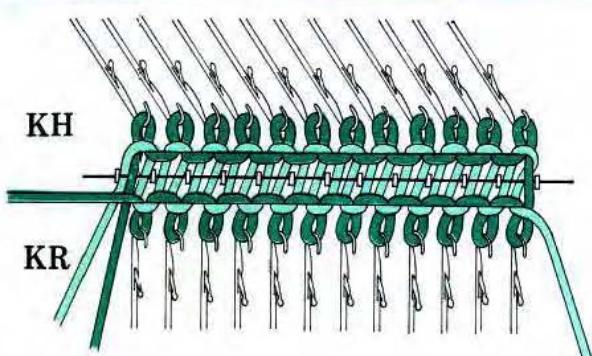
Cast on stitches using a cast-on thread for full needle rib. Hang on cast-on comb and weights.

● How to knit

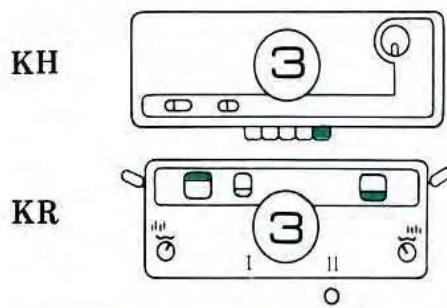
- ① Set the machine as illustrated by the diagram below.



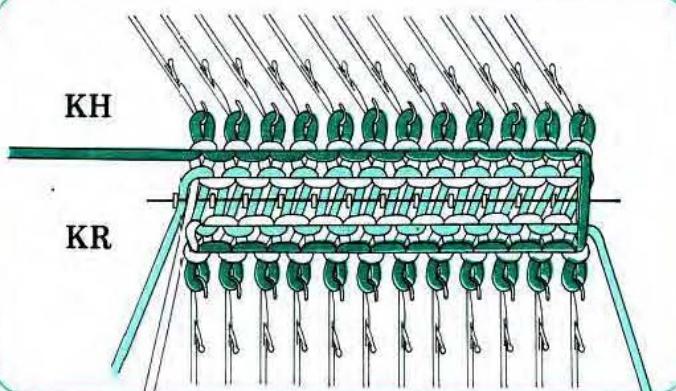
- ② Knit 1 row around.



- ### ③ Change the setting of the carriage.



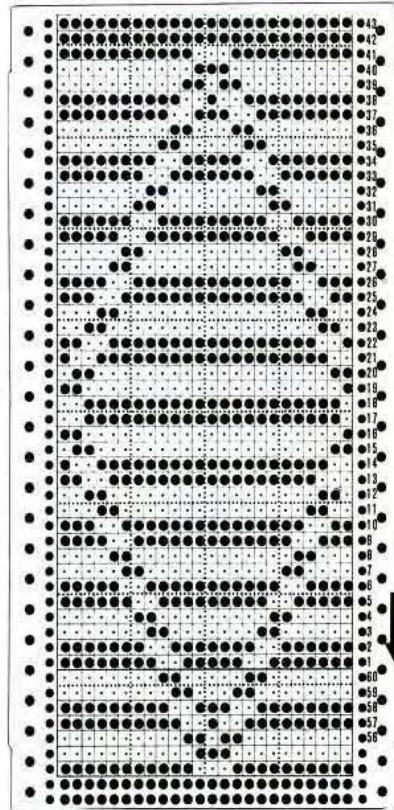
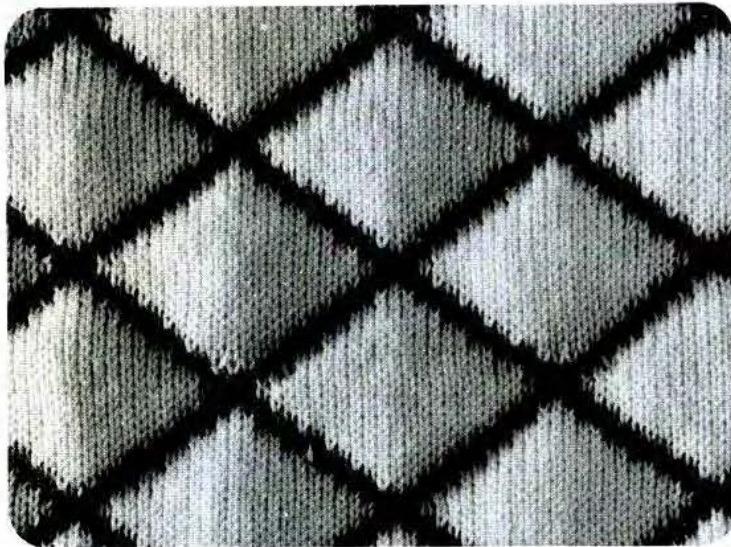
- ④ Knit 1 row around.



Repeat 1 ~ 4 .

Before you start to knit the garment, make a sample swatch and see if both beds knit to the same tension. If they do not, adjust the tension dial on KR carriage.

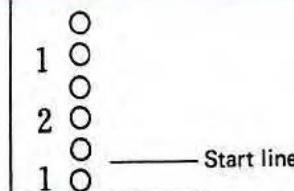
20 Quilting pattern-Using the colour changer



Casting on (Medium yarn)

Cast on the stitches and work the finished edge by circular knitting as for full needle rib.

Thread the contrasting colour yarn into feeder No.2 of the colour changer. Leave button 1 pushed down and thread the main yarn into the yarn feeder.



How to knit

① Set the carriages as the diagram A and knit 1 row. The carriages are at the left side.

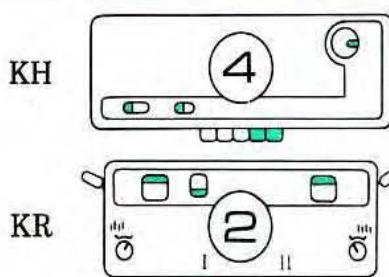


DIAGRAM A

- ② Insert the punchcard and adjust the starting position and set the card lock lever at “●”.
- ③ Set the change knob to “KC” and knit 1 row to the right. The needles are selected.
- ④ Reset the card lock lever at “▼” and depress both Part buttons. Set KR as diagram A, knit 1 row.

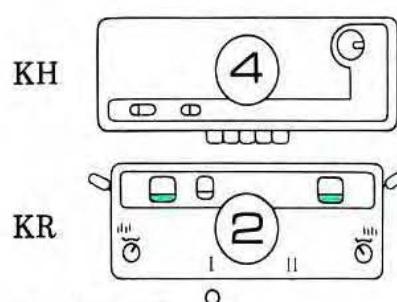


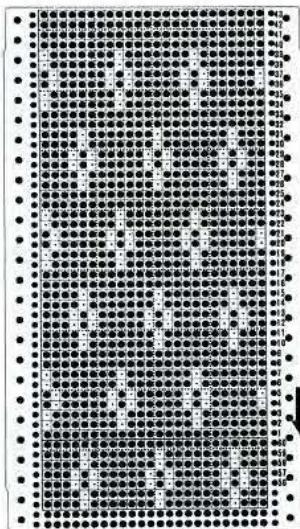
DIAGRAM B

- ⑤ *Replace the yarn with the contrasting colour. Set the KR as diagram B, knit 2 rows.
- ⑥ Replace the yarn with the main colour.
- ⑦ Set the KR as diagram A, knit 2 rows, *
- ⑧ To produce pattern repeat from * to *. It is possible after 4/5ths of a pattern has been worked, to lower the KR and insert wadding or sponge into the knitting. Reset KR in position and continue knitting, repeating the pattern.

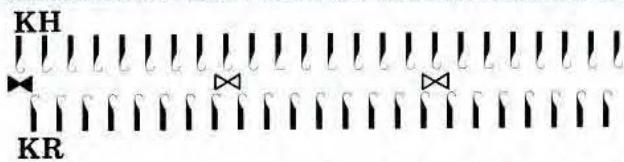
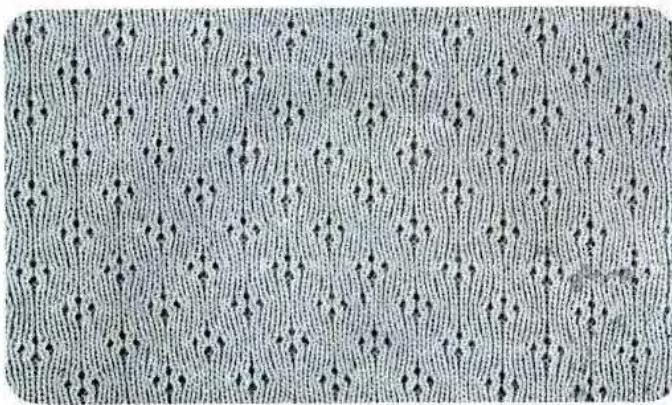
By simply changing the needle arrangement on both KH and KR 4 different kinds of patterns are developed. Like these examples, many original patterns can be worked out very easily. Try it and enjoy a variety of effects.

PATTERN VARIATIONS BY CHANGING NEEDLE ARRANGEMENTS

Basic pattern



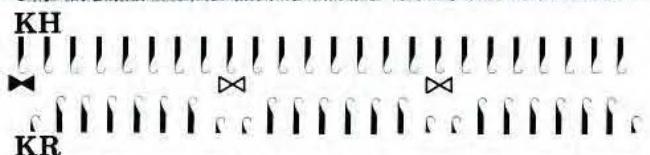
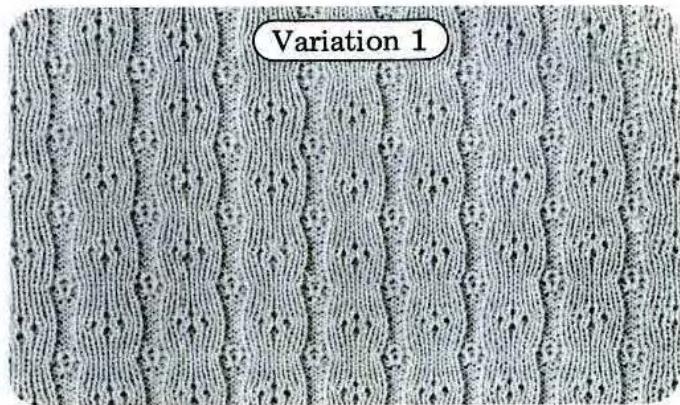
Tucking pattern



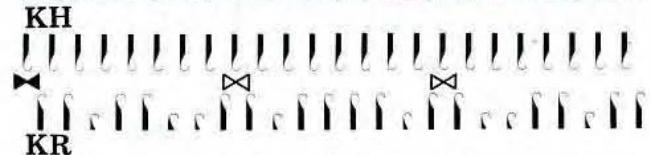
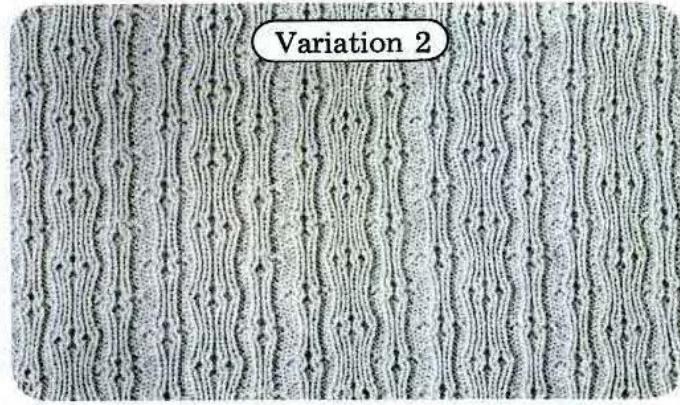
By using the same punchcard but changing the needle arrangement on KR, you have different kinds of patterns. The photographs of variations No.1 to No.3 show more and more needles placed in A position, resulting in a thinner fabric. Plain yarns are recommended. This type of fabric is very suitable for sweaters, one piece dresses, etc.

Variations

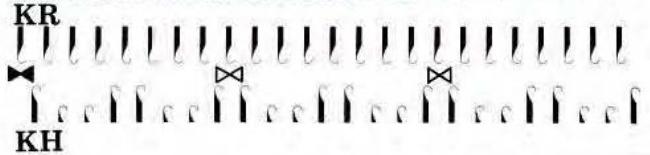
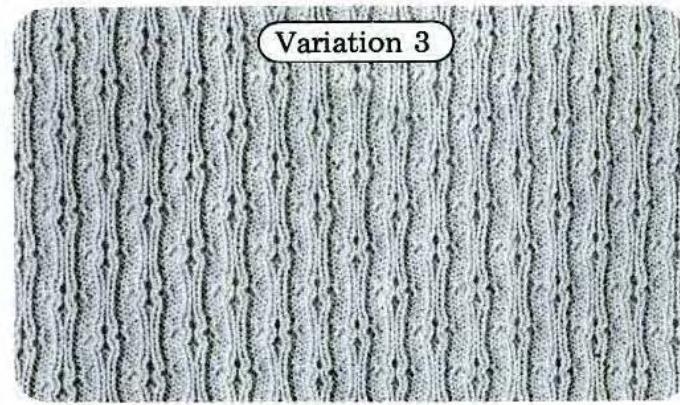
Variation 1



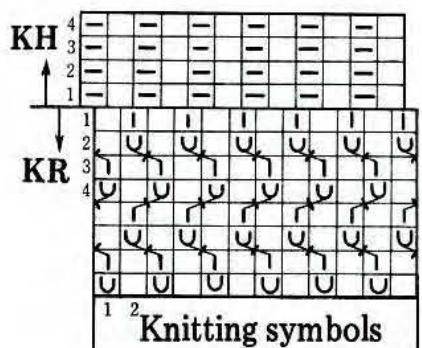
Variation 2



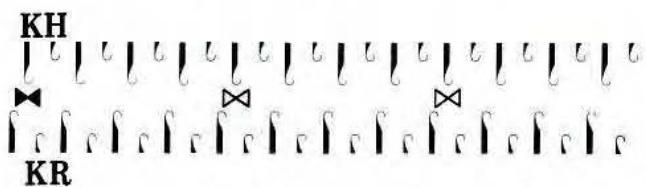
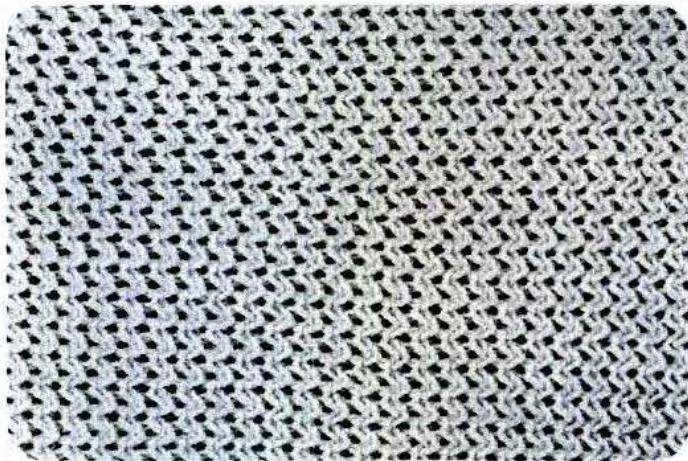
Variation 3



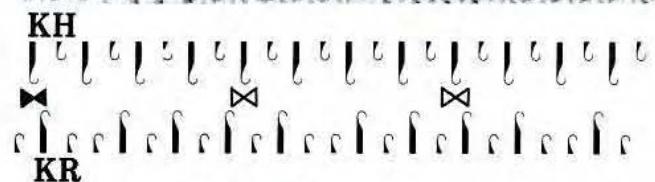
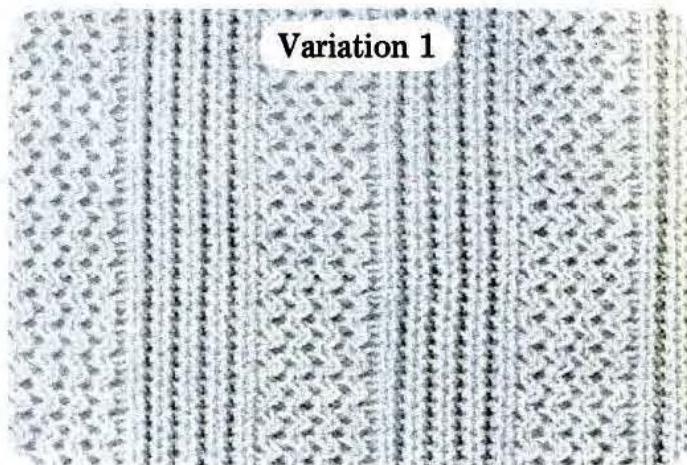
Basic pattern



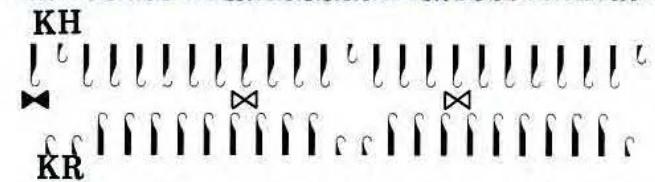
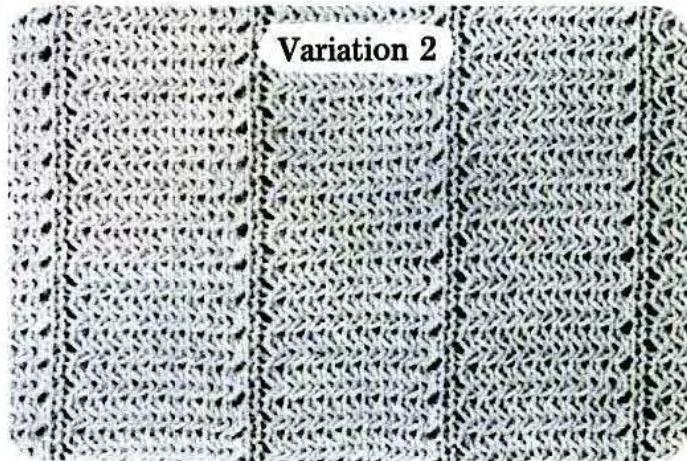
Racking



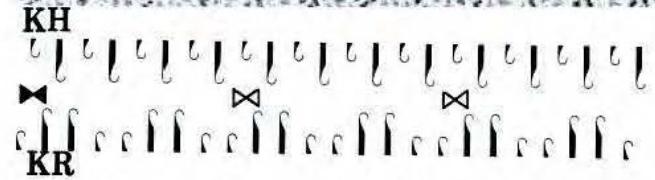
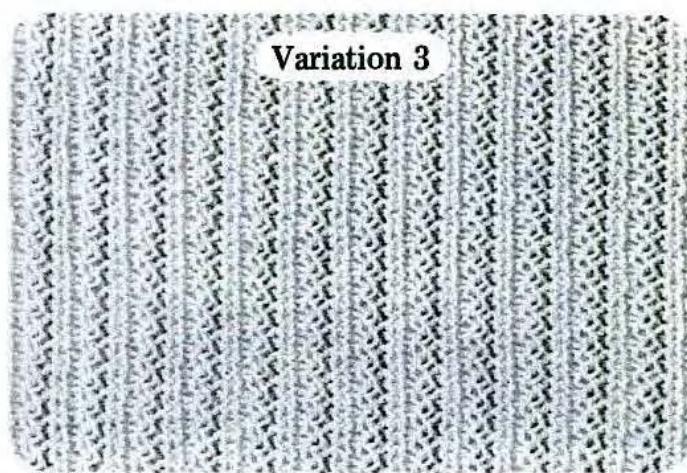
Variations



Variation 1

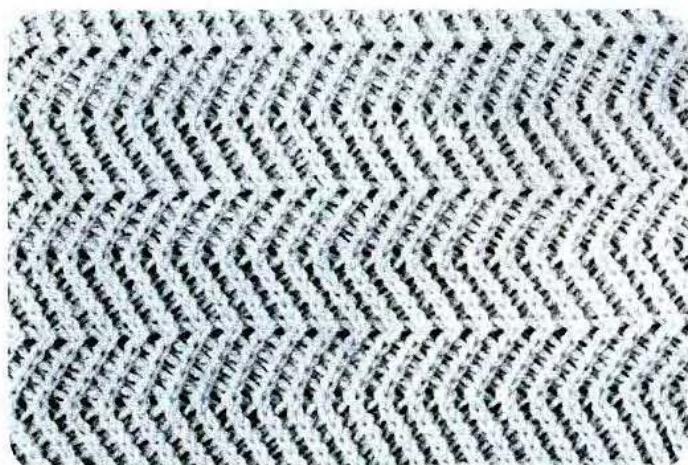
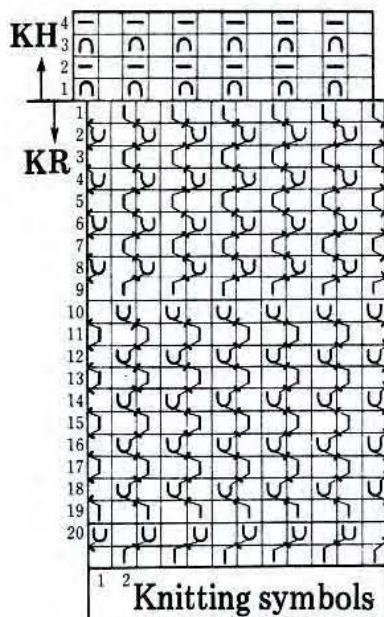


Variation 2



By racking between positions 5 and 4 on the racking indicator plain English rib, may be turned into many different patterns. Heavy yarns are not recommended for this type of knitting as the fabric itself produces a bulky effect. They are recommended for outer garments such as jackets or overcoats.

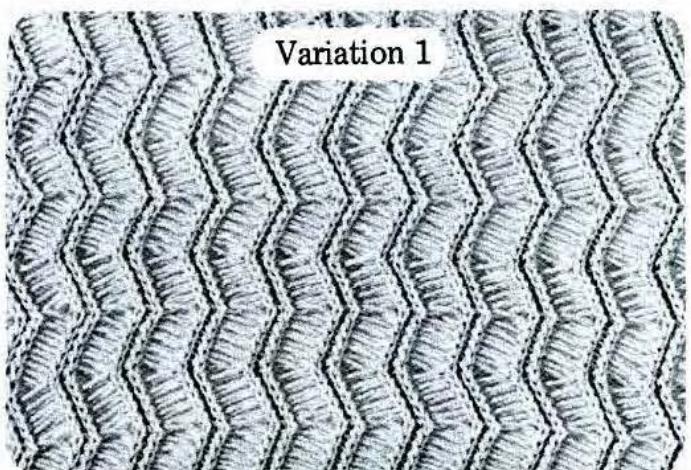
Basic pattern



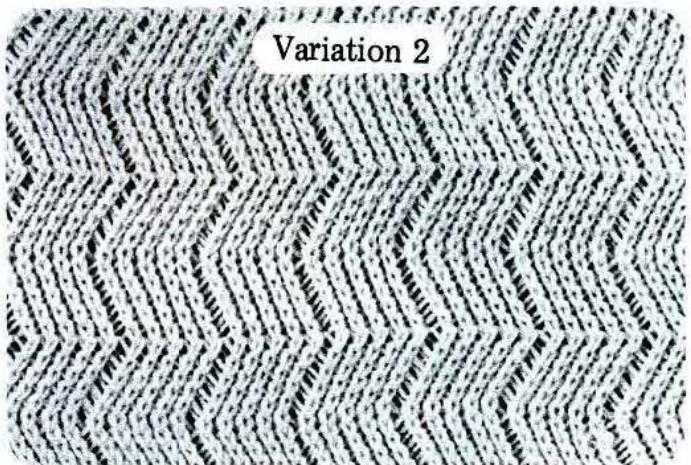
KH
KR
KR

Depending upon the space between working needles, you can produce a fabric from bulky to light and open. By placing some needles into a position even heavy yarns can be knitted, but fine yarns are very effective if used in this way. Try it out with lurex or lame and you will be surprised what an elegant evening dress you can make!

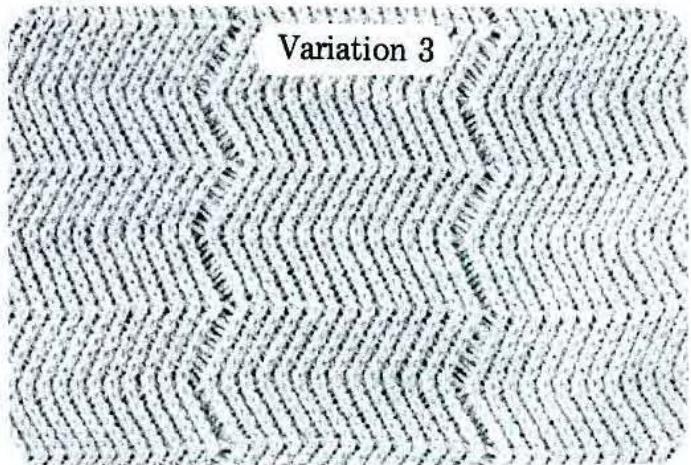
As the pattern is worked in Fishermans rib, it is quite stable so is ideal for shawls also.



KH
KR
KR

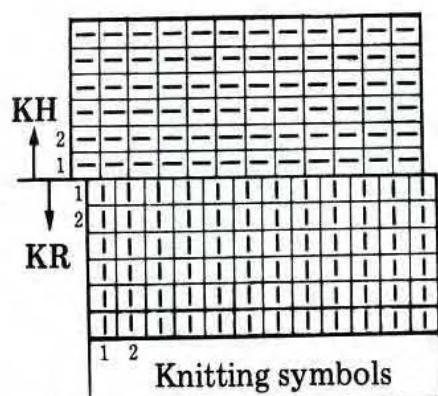


KH
KR
KR



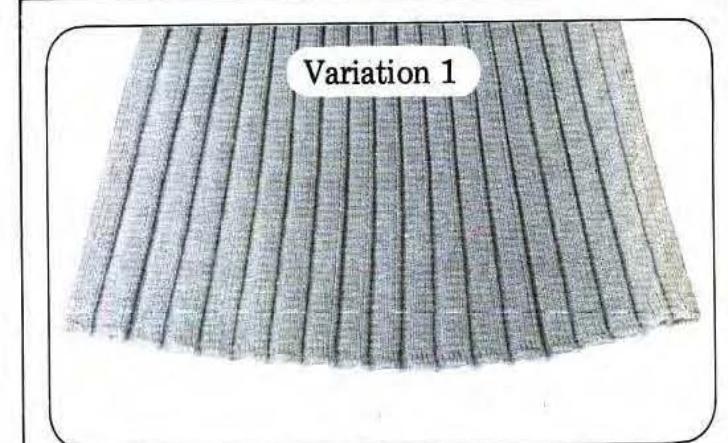
KH
KR
KR

Basic pattern

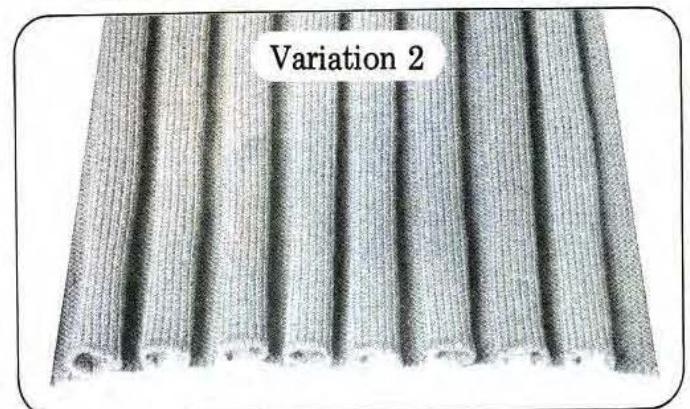


KH →— 1 pleat —→
 KH KR
 KR

Simply by changing the needle arrangement many different types of pleats can be worked. However, in the case of full needle rib the fabric may be heavy unless a fine yarn is used. It is possible, once the needle arrangement has been decided, shape the rest of skirt by adjusting the tension. Mock pleats variation 2 and 3 are very effective.



→— 1 pleat —→
 fold line of inside pleat fold line of inside pleat
 KH fold KH
 KR fold KR



→— 1 pleat —→
 KH KR
 KH KR
 KR KH KR



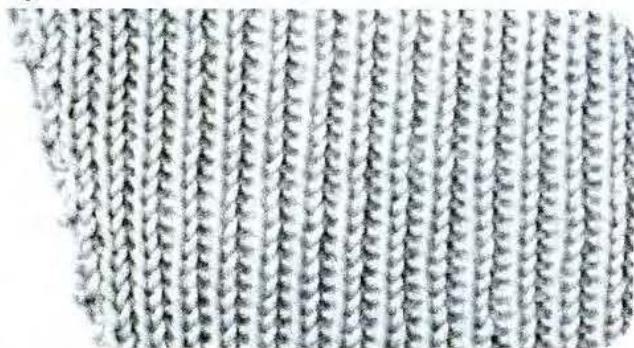
→— 1 pleat —→
 fold line of inside pleat fold line fold line of inside pleat
 KH KR KH

Techniques for Increasing and Decreasing 3

Increasing and decreasing 1 stitch

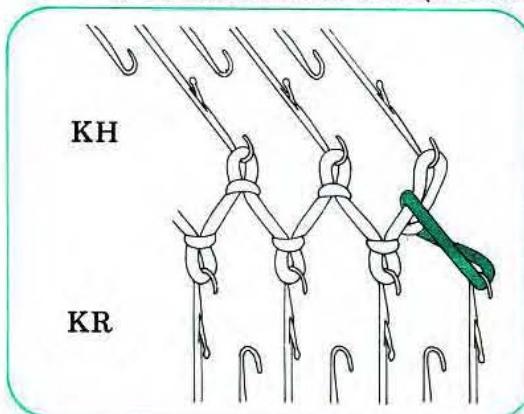
Increasing 1 stitch for 1×1 rib

(Half pitch lever on P)



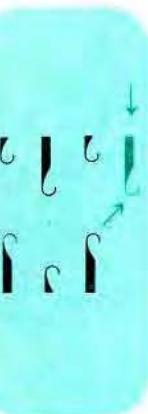
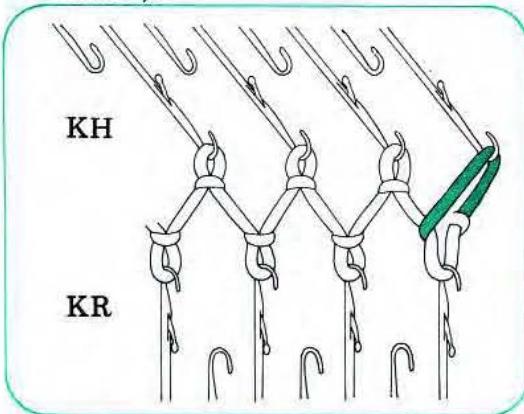
On KR

Take the loop of the first stitch on KH and transfer it onto the second empty needle on KR missing out stitch as shown. (1 stitch is increased).



On KH

Knit until first shaping. Take loop from the edge stitch on KR and hook it onto the second vacant needle missing out first stitch. (1 stitch is increased).



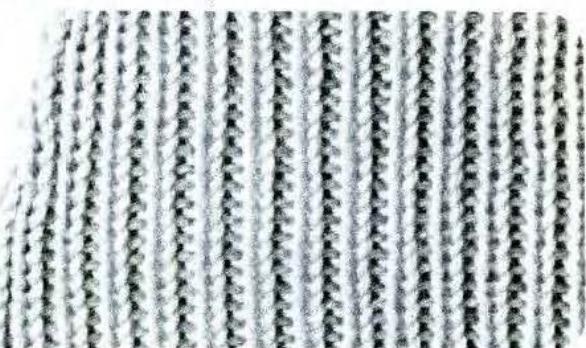
Continue knitting until next increase and repeat the above to shape your garment by increases.

Another way

When increases are required on both sides on KH and KR, first transfer the loop of the first stitch on KH and put it onto the second empty needle on KR, missing first stitch. Then push out the second empty needle on KH to E position and wrap the yarn around its stem. (2 stitches have now been increased).

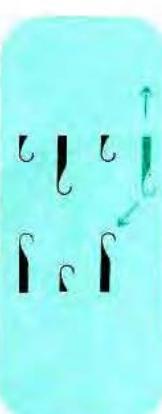
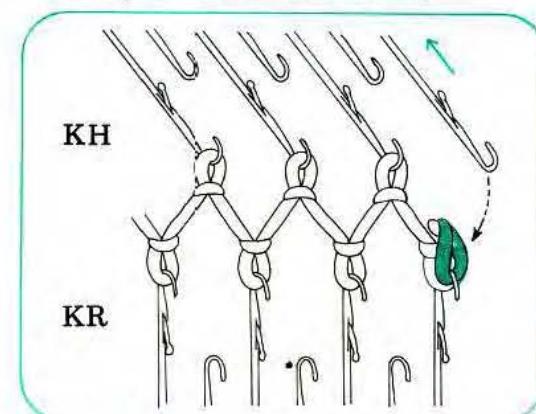
Decreasing 1 stitch for 1×1 rib

(Half pitch lever on P)



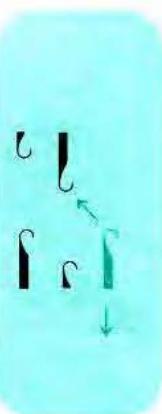
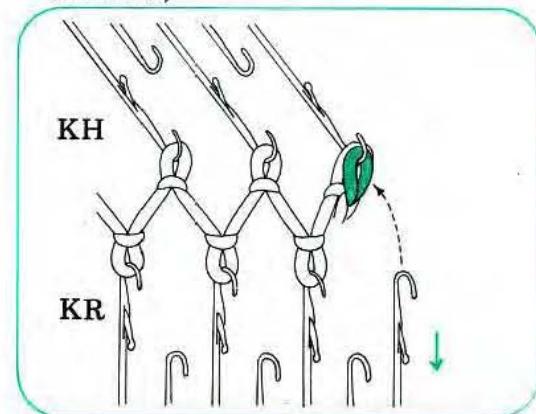
On KH

Transfer the first stitch on KH to the first needle on KR. Push back the empty needle to A position. (1 stitch is decreased.)



On KR

Knit until the next decrease. Transfer the first stitch on KR onto the first needle on KH. Push back the needle to A position. (1 stitch is decreased.)



Knit until the next decrease and repeat above operations.

When you use KR 850 and colour changer, the techniques for increasing and decreasing are different. So refer to the manual for your machine.

Increasing with full needle rib (Half pitch lever on H)



Decreases on full needle rib (Half pitch lever on H)

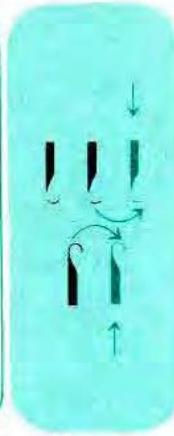
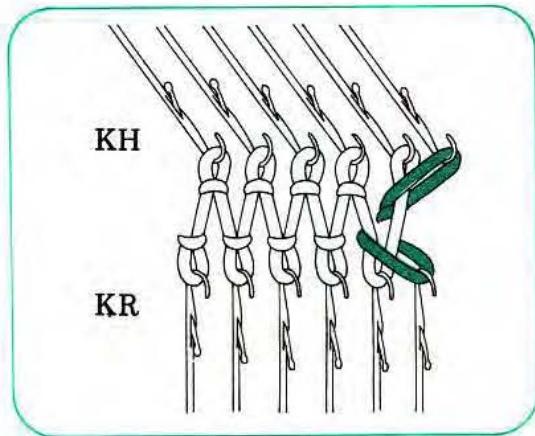


On KH

- Take the loop of the first stitch and put it onto the next empty needle.

On KR

- Take the loop of the first stitch on KR and transfer it onto the next vacant needle. (By operations (1) and (2) 1 stitch is increased).



Knit until the next increase. By repeating the same operation you can shape your garment by increases.

Another way

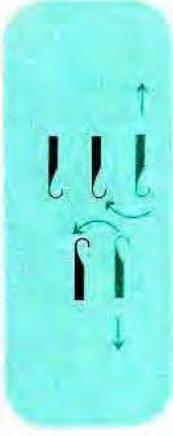
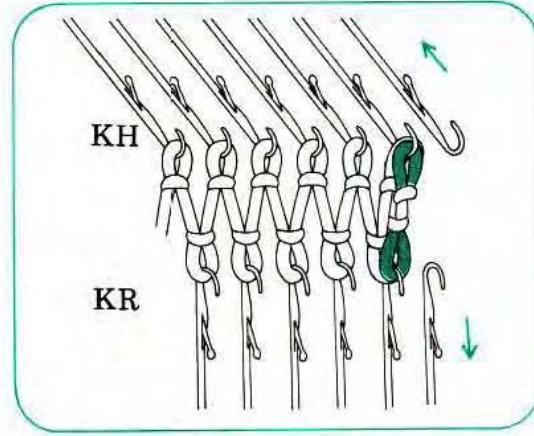
Transfer the loop of the first stitch on KR onto the next empty needle. Push out the first empty needle on KH to E position and wrap the yarn around its stem to increase 1 stitch.

On KH

- Transfer the first stitch on KH onto the adjacent needle. Push back the empty needle to A position.

On KR

- Transfer the first stitch on KR onto the adjacent needle. Push back the empty needle to A position. (By operations (1) and (2) 1 stitch is decreased).



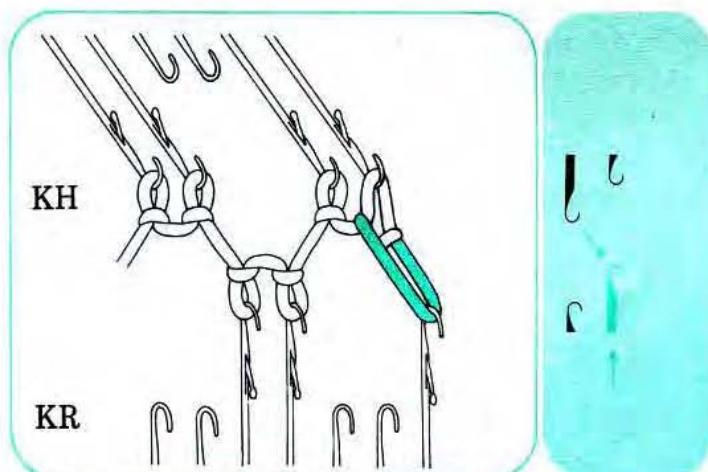
Work until the next decrease and repeat the above.

To avoid a bulky decrease on full needle rib or 2 x 1 rib, you can work (1) and (2) separately instead of in a single operation.

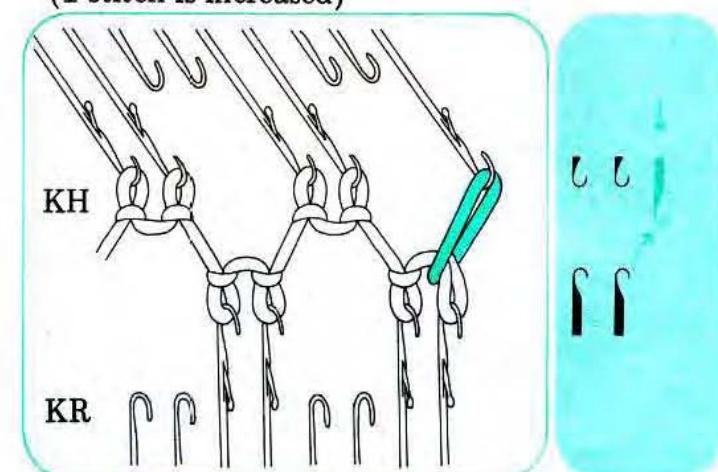
Increases on 2×2 rib (Half pitch lever to P)



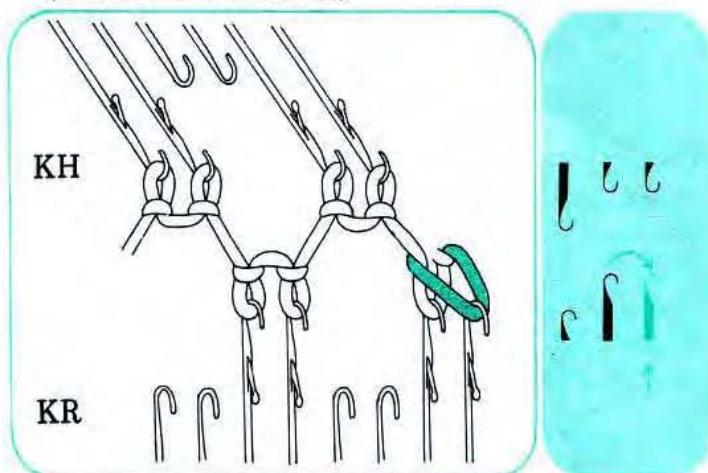
① Take the loop of the edge stitch on KH and put it onto the 3rd empty needle on KR missing out 2 needles (1 stitch is increased.)



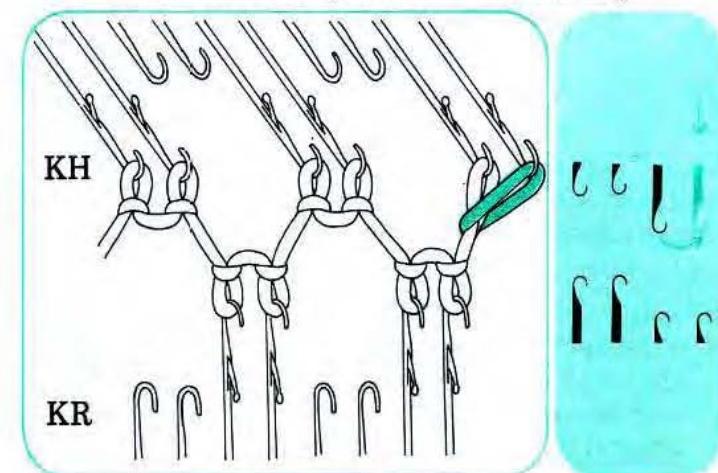
③ Knit until the next increase. Take the loop of the first stitch on KR and transfer it onto the 3rd vacant needle on KH missing out 2 needles. (1 stitch is increased)



② Knit until the next increase. Transfer the loop of the first stitch on KR to the first vacant needle. (1 stitch is increased.)



④ Knit until the next increase. Take the loop of the first stitch on KH and transfer it onto the next vacant needle. (1 stitch is increased.)

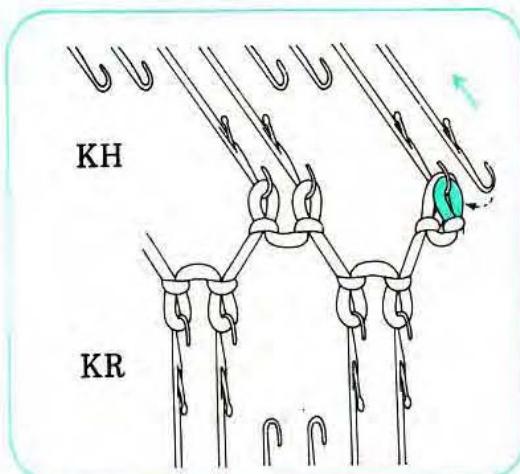


Knit until the next increase and repeat to shape your garment by increases.

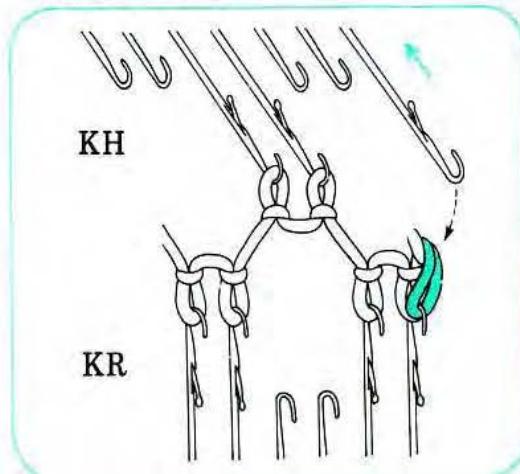
Decreases on 2×2 rib (Half pitch lever to P)



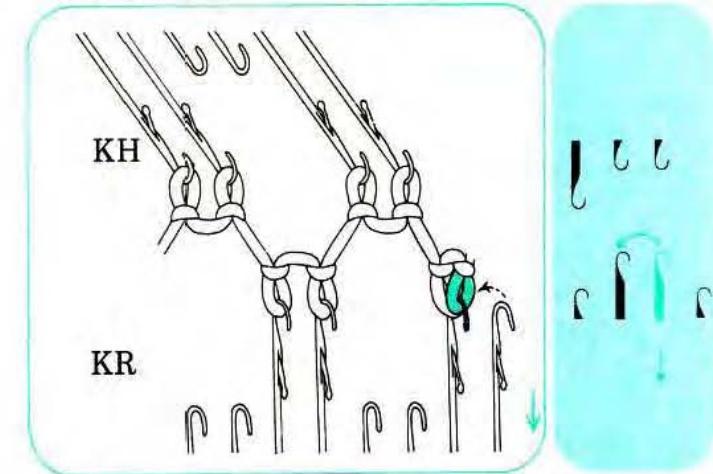
① Transfer the edge stitch on KH onto the next inside needle, push back the empty needle to A position. (1 stitch is decreased.)



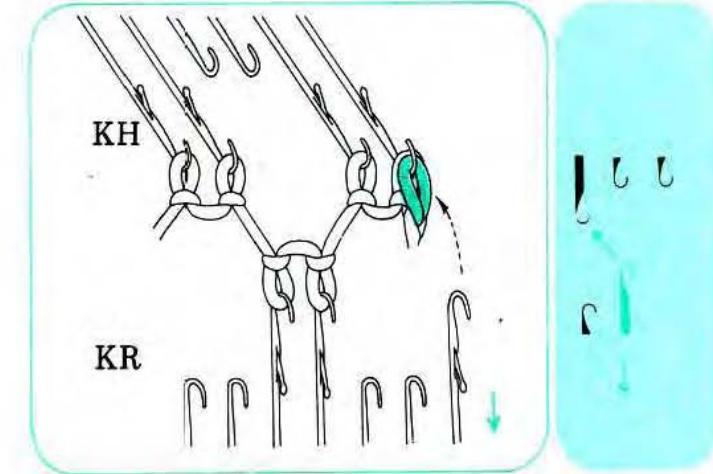
② Knit until the next decrease. Transfer the first stitch on KH onto the first needle on KR. Push back the empty needle to A position. (1 stitch is decreased.)



③ Knit until the next decrease. Transfer the first stitch on KR onto the next inside stitch. Push back the empty needle to A position. (1 stitch is decreased.)



④ Knit until the decrease. Transfer the first stitch on KR onto the first needle on KH. Push back the empty needle to A position(1 stitch is decreased.)

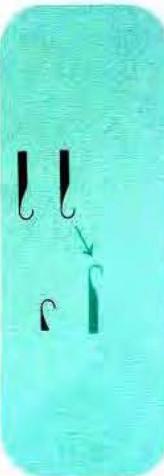
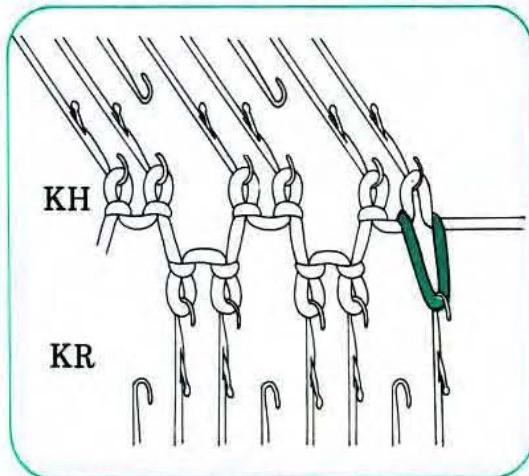


Continue to knit to the position of next decrease and repeat the above operations to shape your garment by decreases.

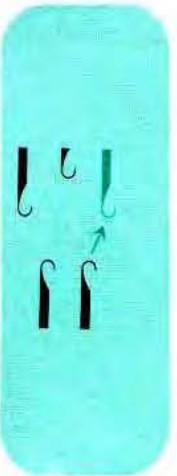
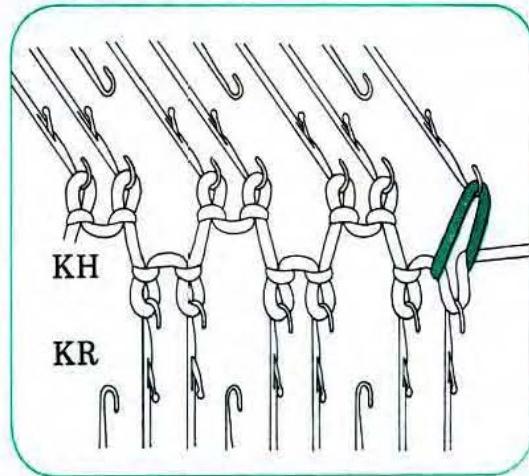
Increasing stitches on 2×2 rib (Half pitch lever to H)



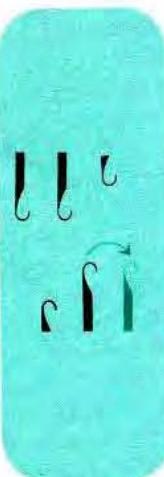
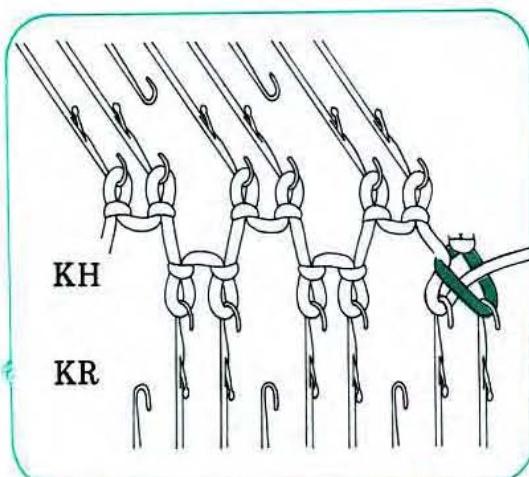
① Take the loop of the first stitch on KH and transfer it onto the 2nd empty needle on KR missing out first empty needle.



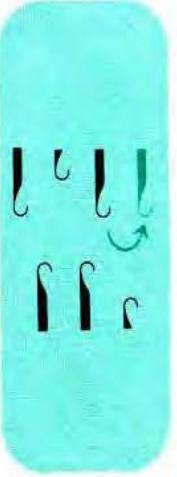
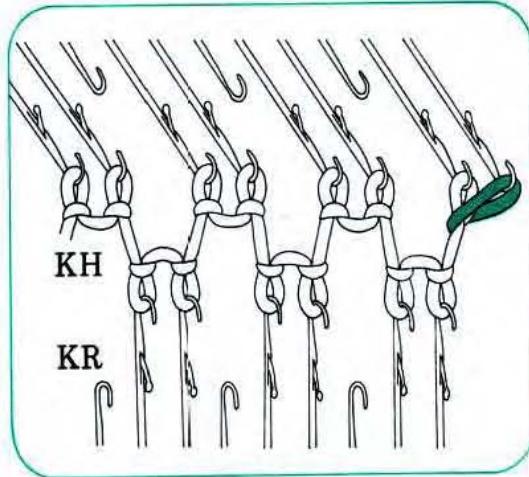
③ Knit until next increase. Take the loop of the first stitch on KR and put it onto the 2nd empty needle on KH



② Knit 1 row. As there is no corresponding stitch on KH side, take the loop of the newly made stitch on KR and transfer it onto the next empty needle. (By operations (1) and (2) 1 stitch is increased).



④ Knit until the next increase. Take the loop of the first stitch on KH and transfer it onto the next empty needle. (1 stitch is increased.)

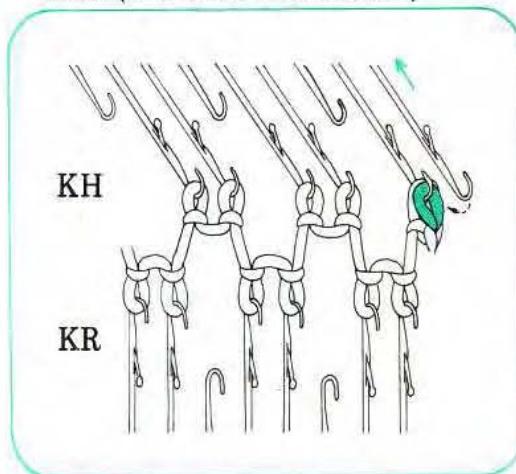


Knit until the next increase and repeat the above operations to shape your garment by increases.

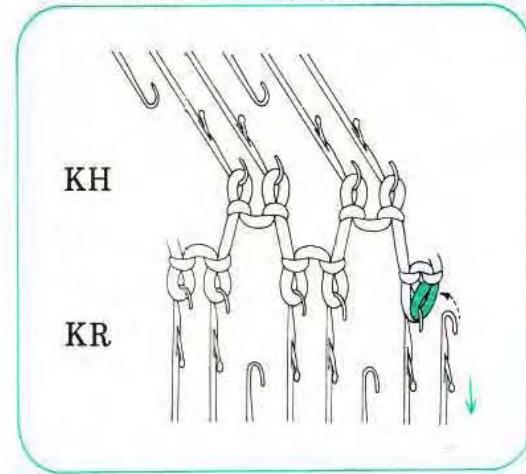
Decreasing stitches on 2×2 rib (Half pitch lever to H)



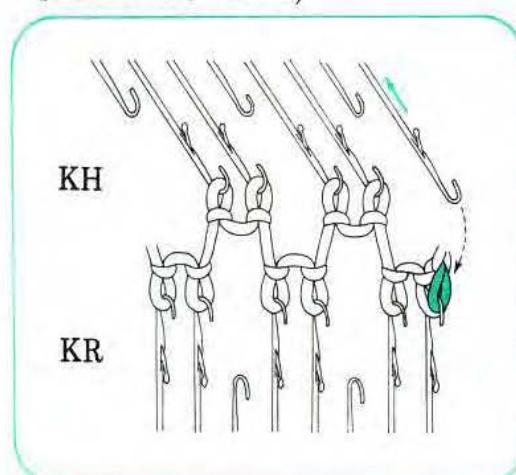
① Transfer the first stitch on KH onto the adjacent needle. Push back the empty needle to A position. (1 stitch is decreased.)



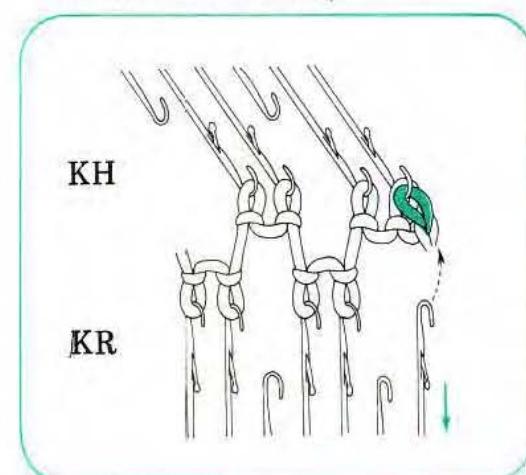
③ Continue knitting until next decrease. Transfer the edge stitch onto the adjacent needle on KR. Push back the empty needle to A position.



② Knit until the next decrease. Transfer the edge stitch on KH onto the edge needle on KR and push back the empty needle to A position. (1 stitch is decreased.)



④ Knit 1 row. Transfer the first stitch on KR onto the needle on KH and push back the empty needle to A position. (By operations (3) and (4) 1 stitch is decreased).



By repeating above operations you can shape your garment by decreases.

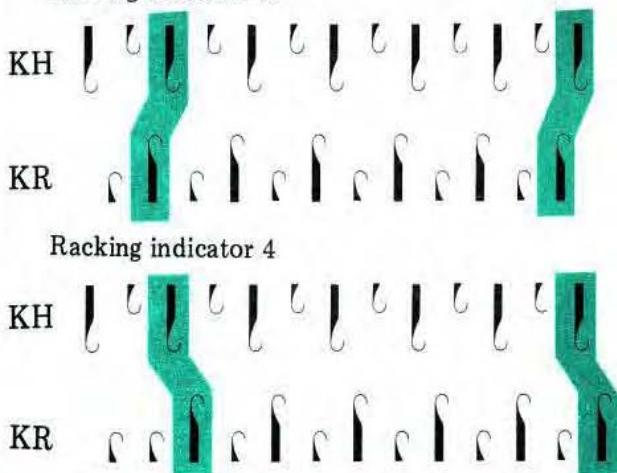
■ Increasing on Racked English Rib (Half pitch lever to H)



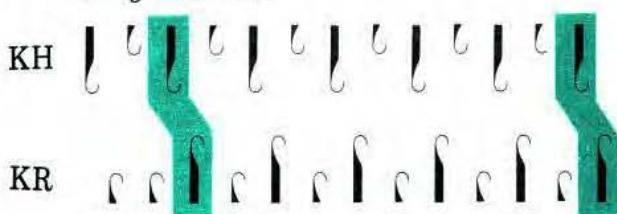
Increases are worked when the stitches on KR are not tucked.

When the KR bed is racked as (5 ⇄ 4) the position of KR needless will be as the diagram below.

Racking indicator 5



Racking indicator 4

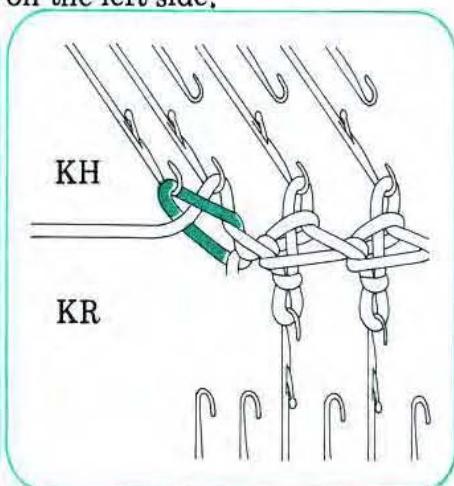
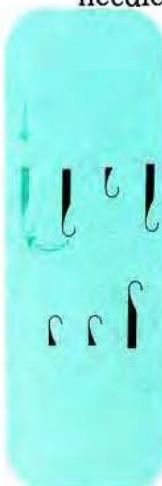


KH	4	-	-	-	-	-	-	-
KR	3	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-
	1	U	U	U	U	U	U	U
	2	U	U	U	U	U	U	U
	3	U	U	U	U	U	U	U
KR	4	U	U	U	U	U	U	U
	1	2	3	4	5	6	7	8
	9	10	11	12				

Knitting Symbols

● Left side

L-1)-a Take the loop of the first stitch on KH and put it onto the next vacant position after needle on the left side.

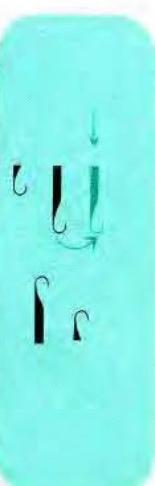
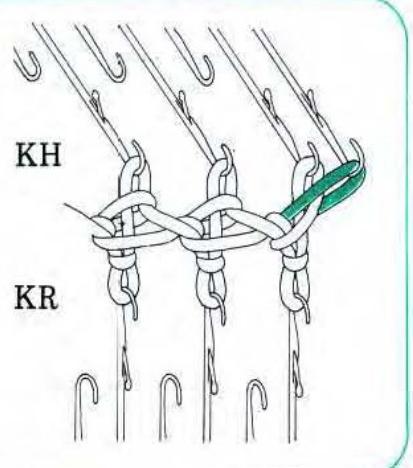


Racking Indicator 5

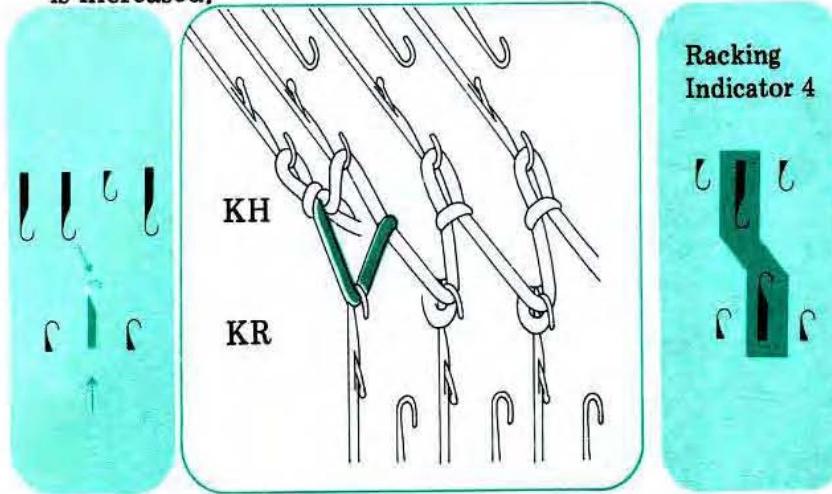


● Right side

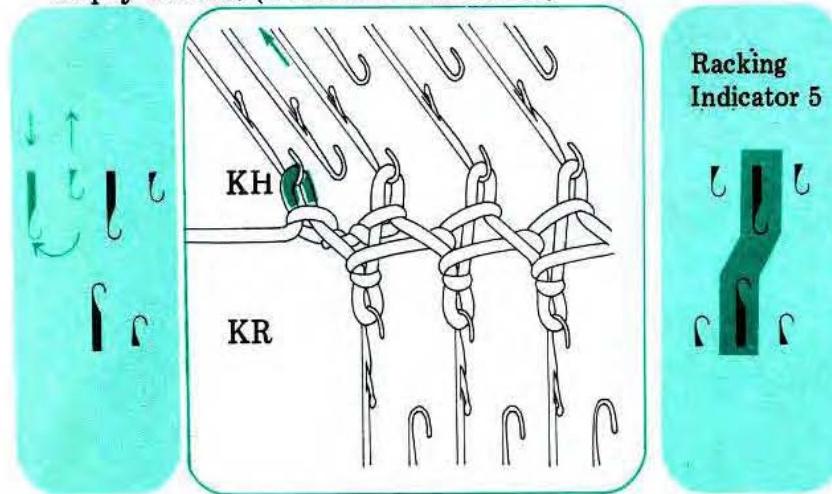
R-1) Take the loop of the first stitch on the right side of KH and put it onto the next vacant needle on the right side. (1 stitch is increased.)



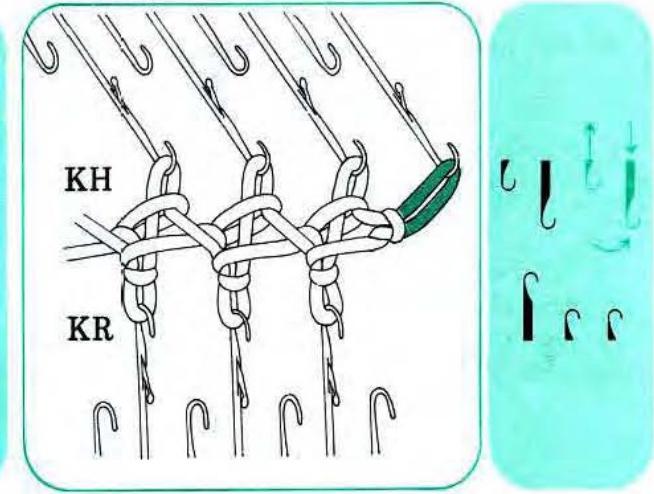
L-1)-b Knit 1 row. Transfer the loop of the stitch on KH (as there is no loop on the edge stitch on KR) onto the vacant needle on KR. (By operations (a) and (b) 1 stitch is increased.)



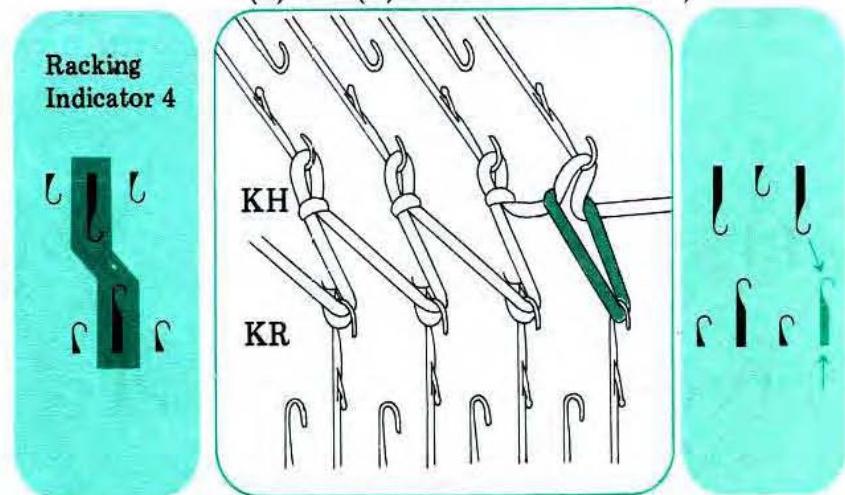
L-2) Knit until the next increase. Transfer the first edge stitch on KH to the next empty needle. (1 stitch is increased.)



R-2)-a Knit until the next increase transfer the edge stitch on KH onto the 2nd vacant needle.



R-2)-b Knit 1 row. Take the loop of the first stitch on KH and put it onto the second empty needle on KR side. (By operations (a) and (b) 1 stitch is increased.)



Continue knitting until the next increase and repeat the above to shape your garment by increasing.

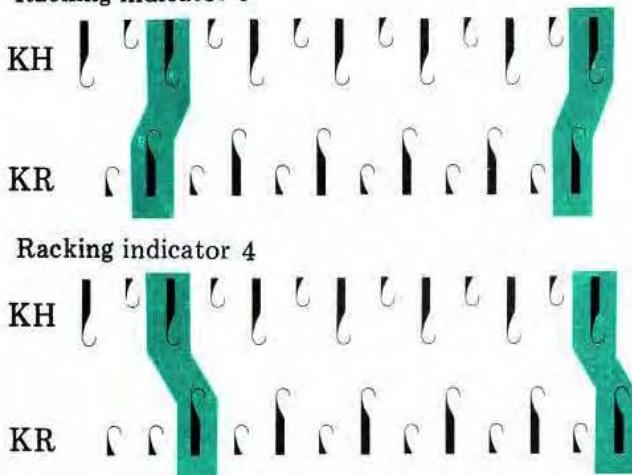
Decreases on Racked English Rib (Half pitch lever to H)



Decreases are worked when the stitches on KR are not tucked.

When the KR side is racked as (5 \leftarrow 4) the position of KR needles in relation to KH needles will be as the diagram below.

Racking indicator 5



	1	2	3	4	5	6	7	8	9	10	11	12
KH	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
	1	2	3	4	5	6	7	8	9	10	11	12
KR	U	U	U	U	U	U	U	U	U	U	U	U
4	U	U	U	U	U	U	U	U	U	U	U	U
3	U	U	U	U	U	U	U	U	U	U	U	U
2	U	U	U	U	U	U	U	U	U	U	U	U
1	U	U	U	U	U	U	U	U	U	U	U	U

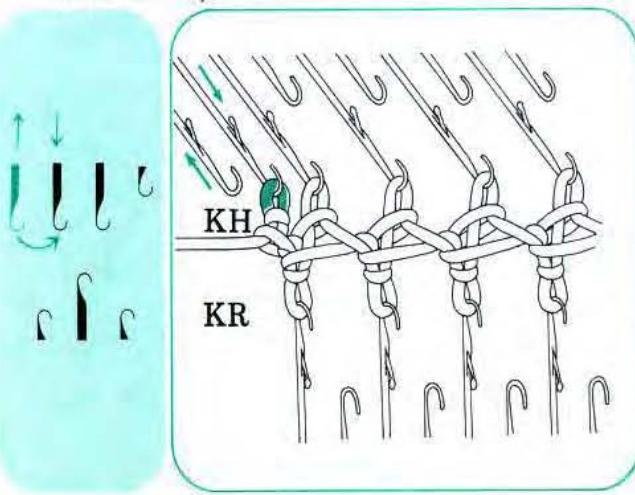
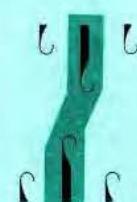
Knitting Symbols

Left side

- L-1) Transfer the first stitch on KH onto the inner vacant needle. (Push back the vacant needle to A position. (1 stitch is decreased.)

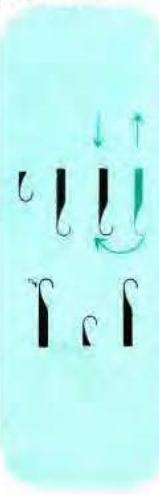
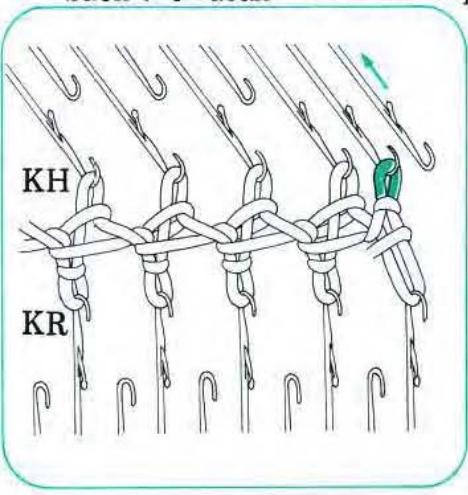
The needle position after racking

Racking Indicator 5

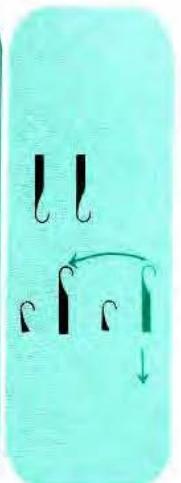
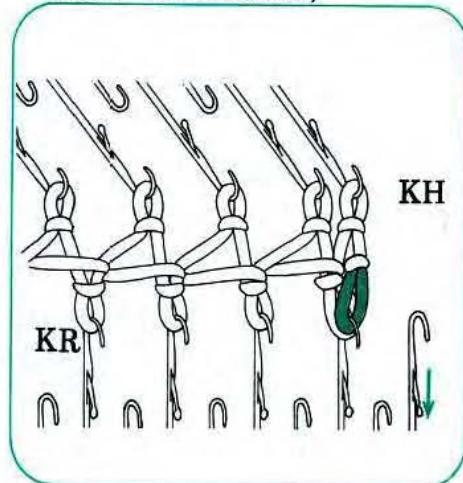
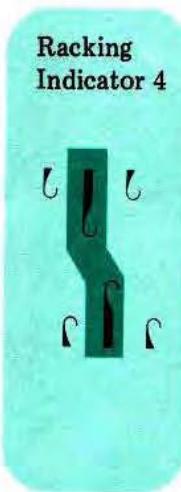


Right side

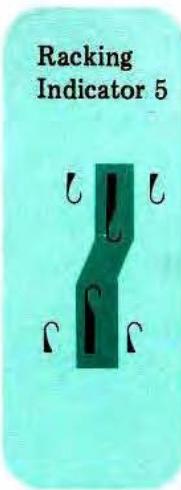
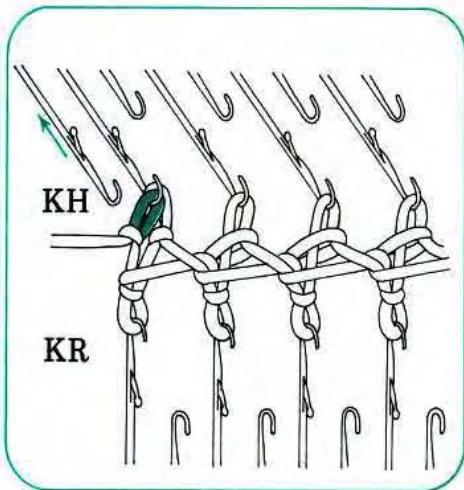
- R-1)-a Move in the edge stitch onto the next inner vacant needle on KH. Push back the vacant needle to A position.



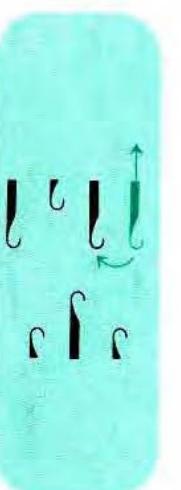
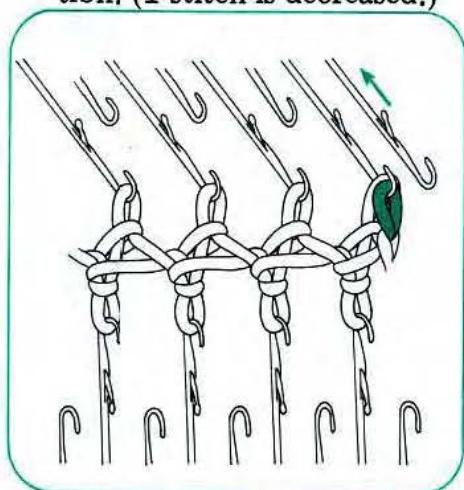
R-1)-b Knit 2 rows. Transfer the edge stitch on KR onto the next inner needle. Push back the empty needle to A position. (1 stitch is decreased.)



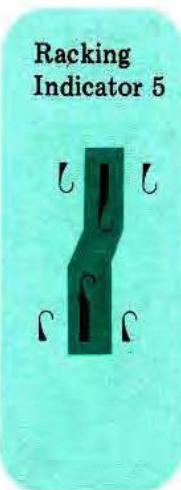
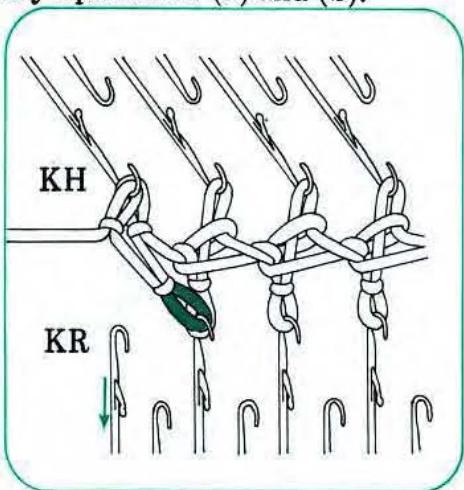
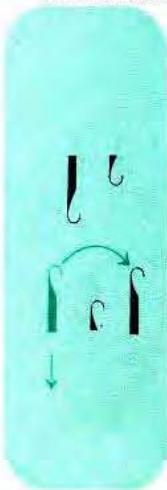
L-2)-a Knit until the next decrease. Transfer the edge stitch on KH onto the next inner needle. Push back the empty needle to A position.



R-2) Knit until the next decrease. Transfer the edge stitch onto the inner needle. Push back the empty needle to A position. (1 stitch is decreased.)



L-2)-b Transfer the edge stitch on KR onto the next inner needle. Push back the vacant needle to A position. (1 stitch is decreased by operations (a) and (b)).



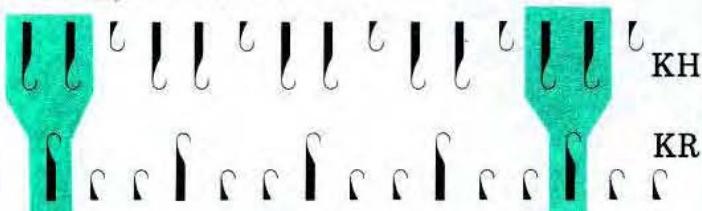
Continue knitting until the next decrease and repeat the above to shape your garment by decreasing.

Increasing on Racking pattern over 2 pitches (Half pitch lever to H)

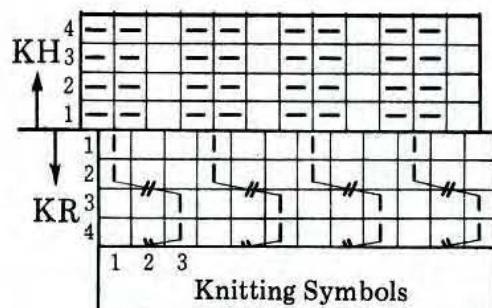
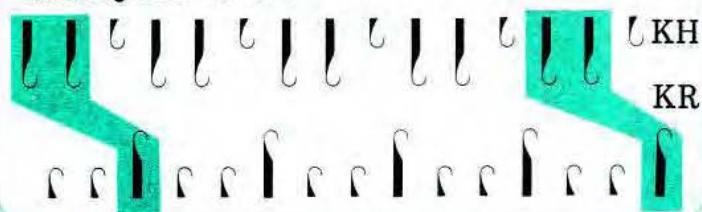


When the KR is racked as (5 ⇌ 3) the position of KR needles in relation to KH needles will be as the diagram below.

Racking indicator at 5



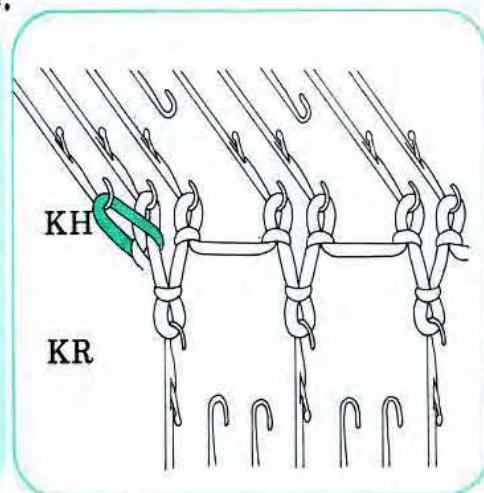
Racking indicator at 3



Left side

- L-1-(a) Take the loop of the edge stitch on KH and transfer it onto the next vacant needle.

The needle position after racking

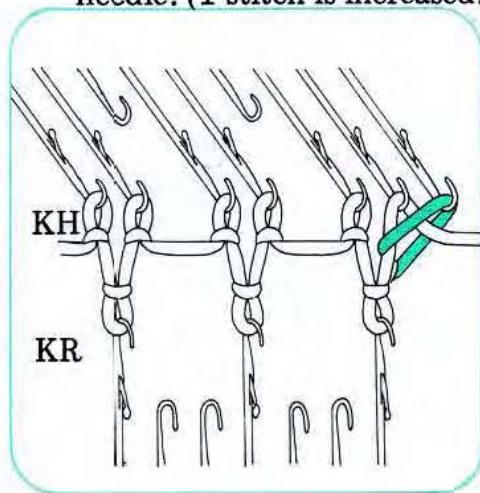


Racking Indicator 5

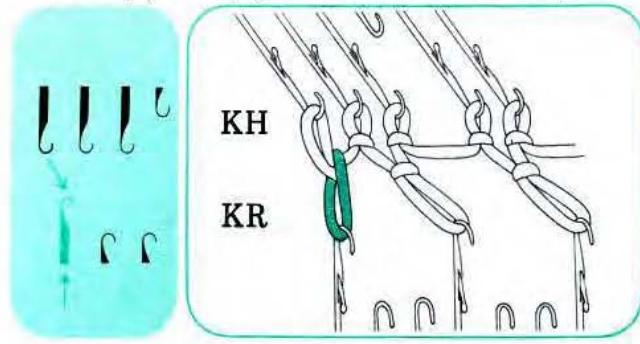


Right side

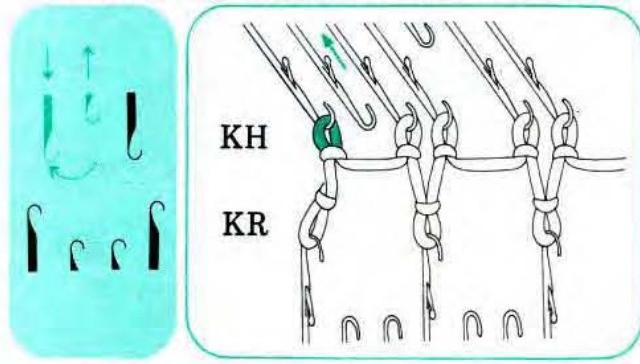
- R-1) Take the loop of the first stitch on KH and transfer it onto the next vacant needle. (1 stitch is increased.)



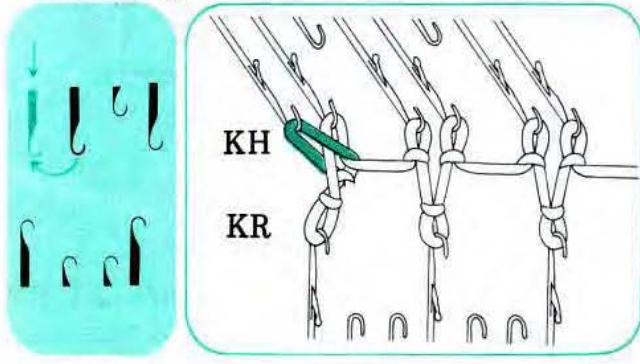
L-1)-b Knit 2 rows and rack. Take the loop of edge stitch on KH and transfer it onto the 3rd empty needle on KR. (By operations (a) and (b) 1 stitch is increased.)



L-2) Knit until the next increase. Transfer the edge stitch on KH and put it onto the next vacant needle. (1 stitch is increased).



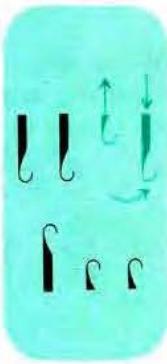
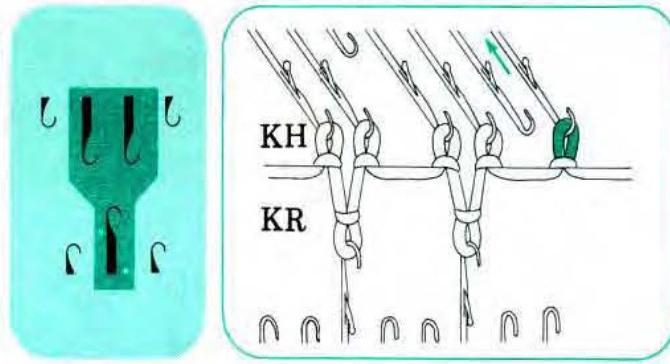
L-3) Knit until the next increase. Take the loop of the edge stitch on KH and put it onto the next vacant needle. (1 stitch is increased).



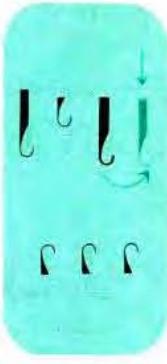
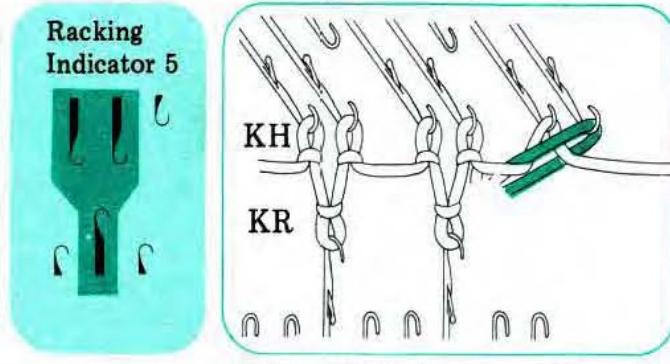
Racking indicator 3



R-2) Knit until next increase. Transfer the first stitch on KH to the next outer needle. Push back the empty needle to A position.



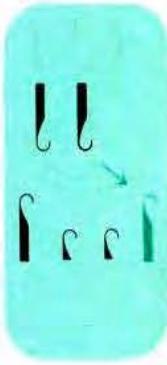
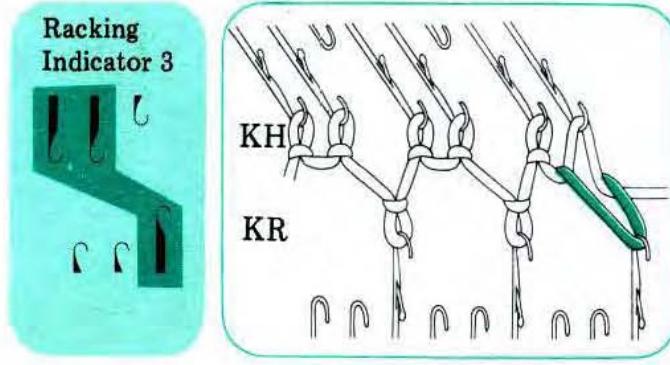
R-3)-a Knit until the next increase. Then transfer the loop of the edge stitch on KH and put it onto the next outer needle.



Racking Indicator 5

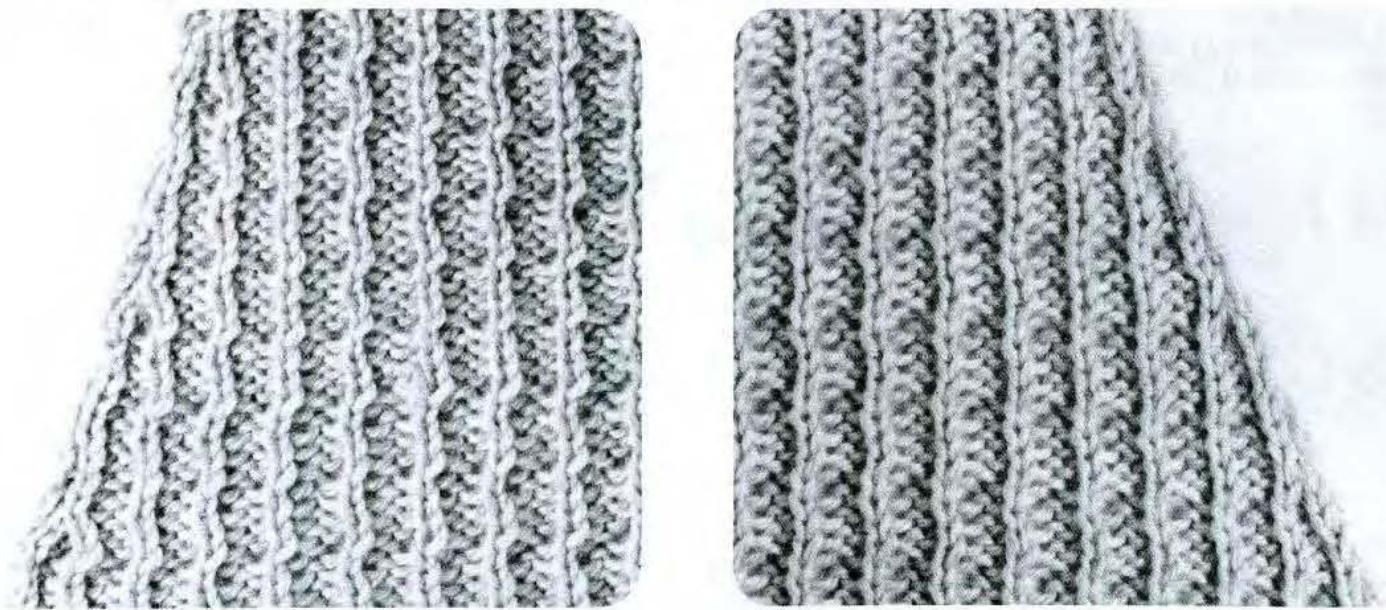


R-3)-b Knit 2 rows. Take the loop of the edge stitch on KH and transfer it onto the empty needle on KR. (By operation (a) and (b) 1 stitch is increased.)

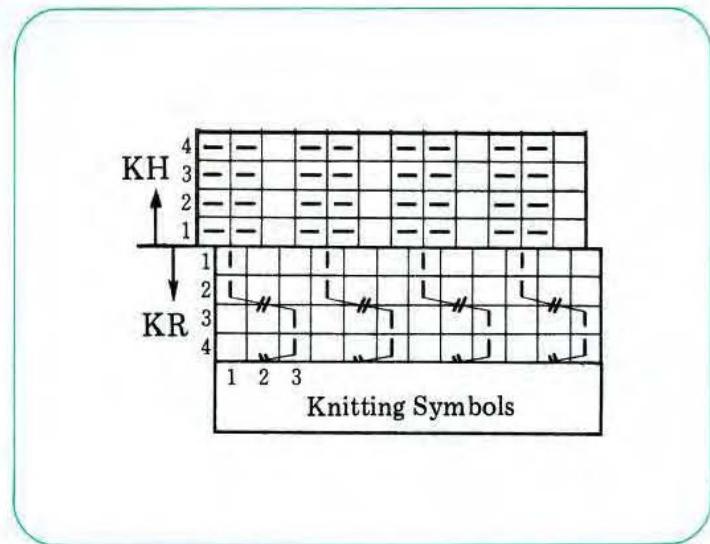
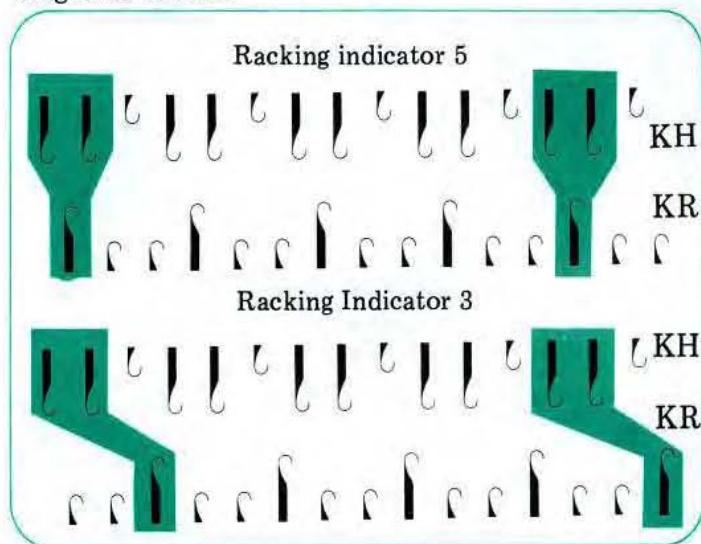


Knit until the next increase and by repeating the above operations you can shape your garment by increases.

Decreasing on Racking pattern over 2 pitches (Half pitch lever to H)

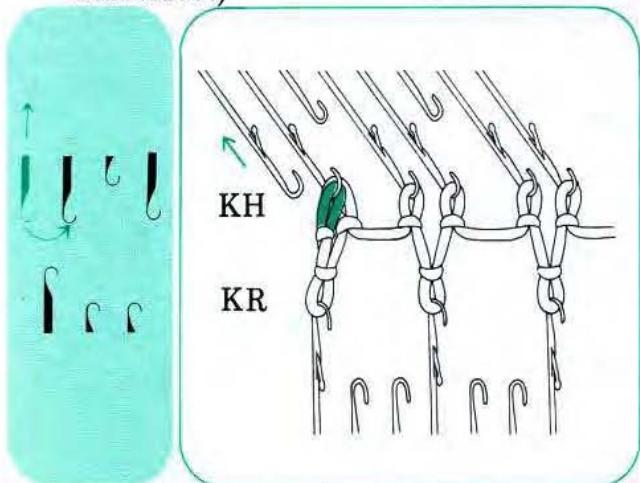


When KR is racked as $(5 \leftarrow 3)$, the position of KR needles in relation to KH needles will be as the diagrams below.



Left side

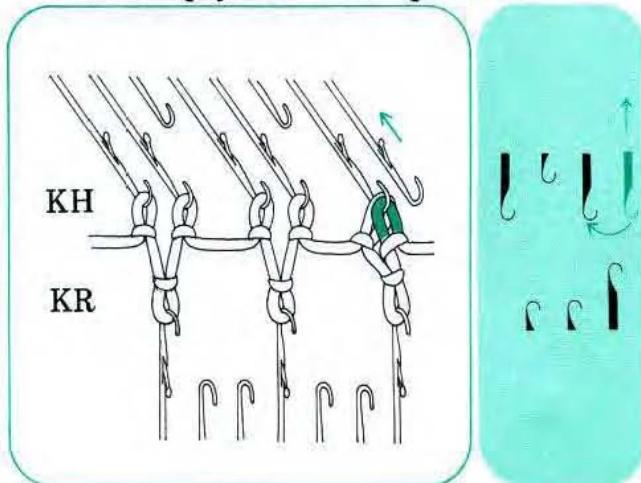
- L-1) Transfer the first stitch on KH onto the next inner stitch and push back the empty needle to A position. (1 stitch is decreased.)



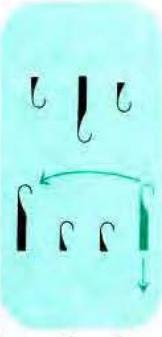
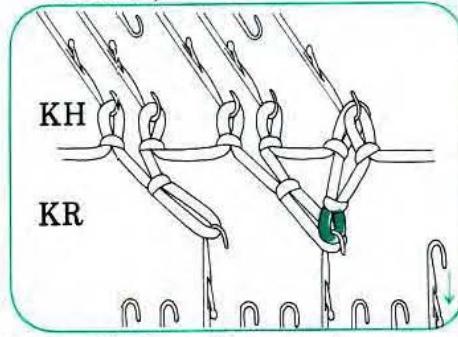
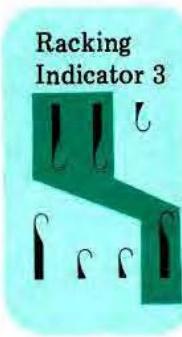
The needle position after racking

Right side

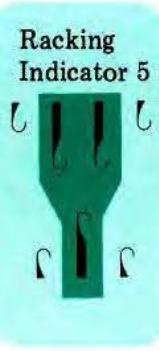
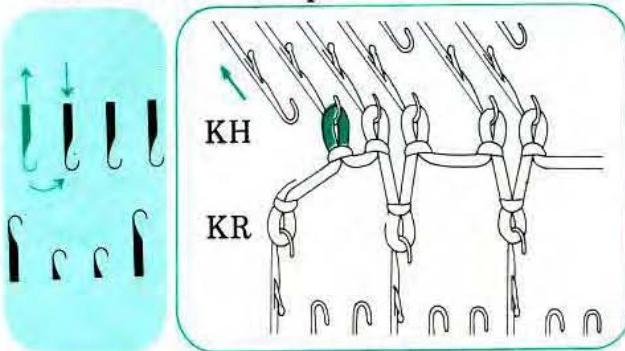
- R-1-a) Transfer the first stitch on KH onto the next inner stitch and push back the empty needle to A position.



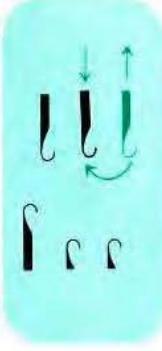
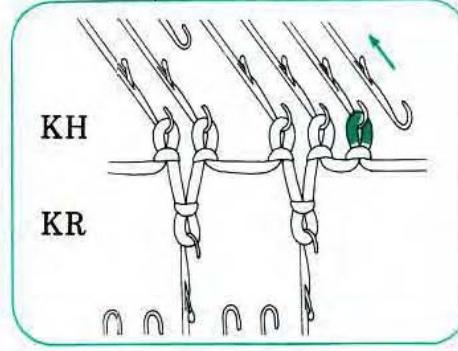
R-1)-b) Rack first. Then transfer the edge stitch on KR onto the inner stitch. Push back the vacant needle to A position. (By operations (a) and (b) 1 stitch is decreased.)



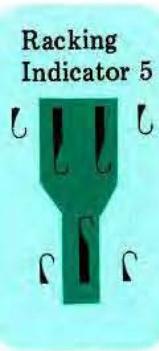
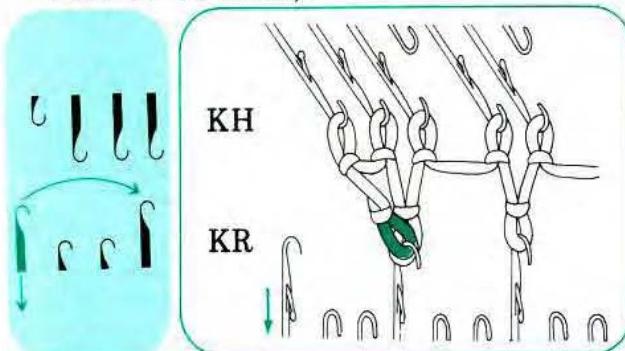
L-2)-a) Knit until the next decrease. Transfer the edge stitch on KH to the next inner vacant needle. Push back the vacant needle to A position.



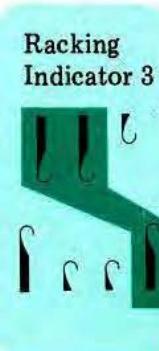
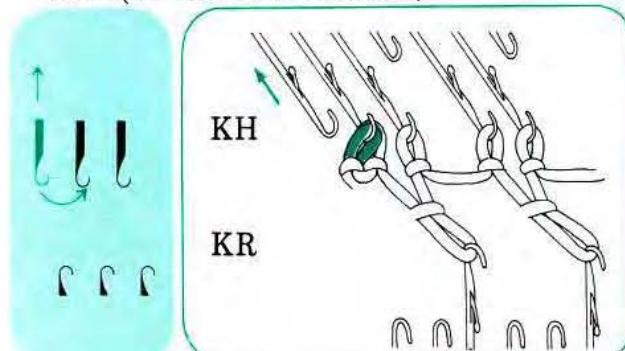
R-2) Knit until next decrease. Transfer the edge stitch on KH to the next inner vacant needle. Push back the vacant needle to A position. (1 stitch is decreased.)



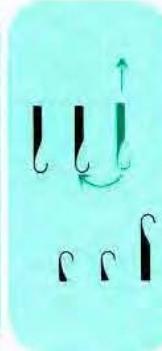
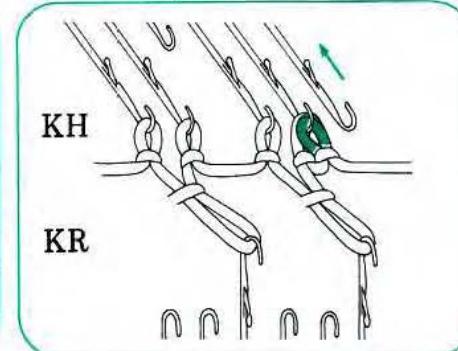
L-2)-b) Transfer the first stitch on KR onto the next stitch and push back the vacant needle to A position. (By operations (a) and (b) 1 stitch is decreased).



L-3) Knit until the next decrease. Transfer the edge stitch over the next inner stitch. Push back the empty needle to A position. (1 stitch is decreased.)



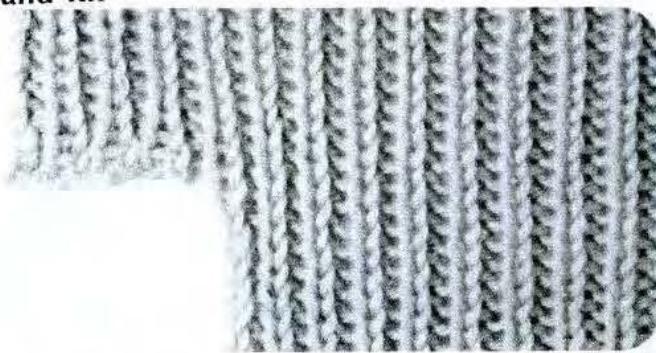
R-3) Knit until the next decrease. Transfer the edge stitch on KR onto the next inner stitch. Push in the vacant needle to A position. (1 stitch is decreased).



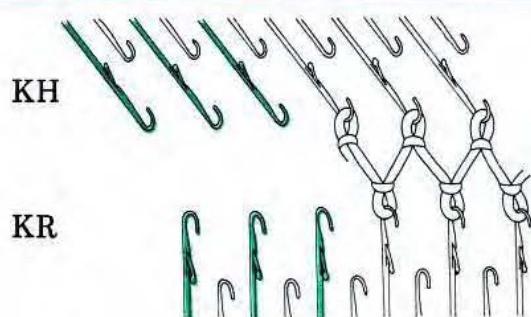
Knit until the next decrease and by repeating the above operations you can shape your garment by decreases.

Increasing more than 2 stitches

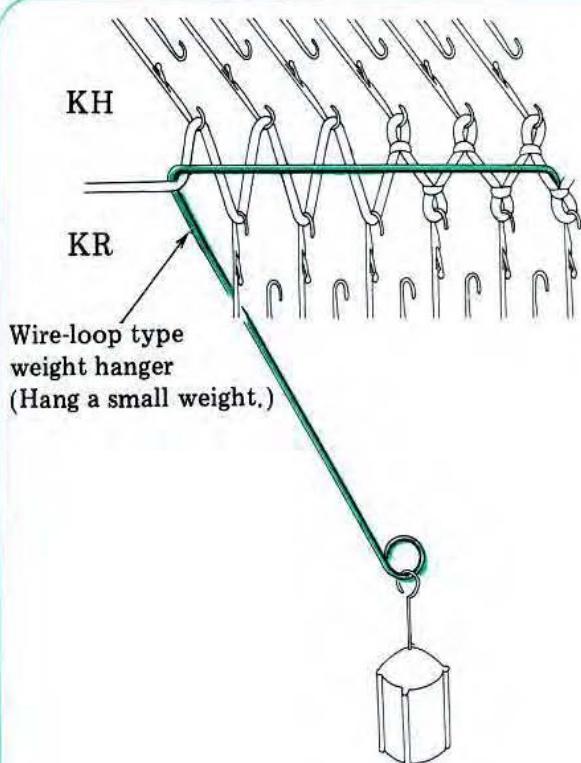
A) When increases are worked on both KH and KR



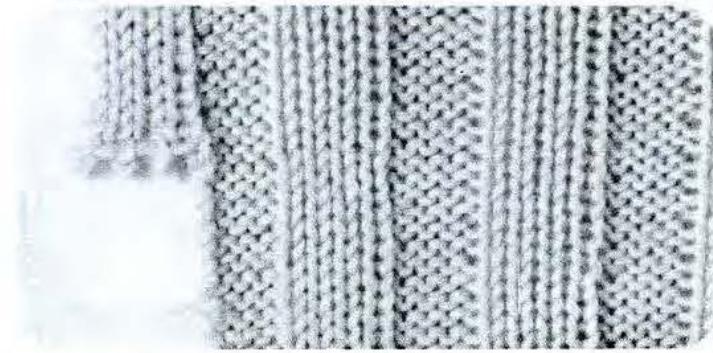
A-1) Place the carriage at the side opposite to where increases are desired. Arrange the required number of needles on KH and KR for increase to B position.



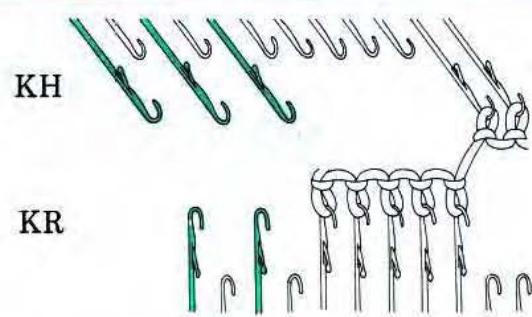
A-2) Move the carriage once over the needles. The needles arranged in B position catch yarn. Hang a wire-loop type weight hanger and a small weight and continue knitting.



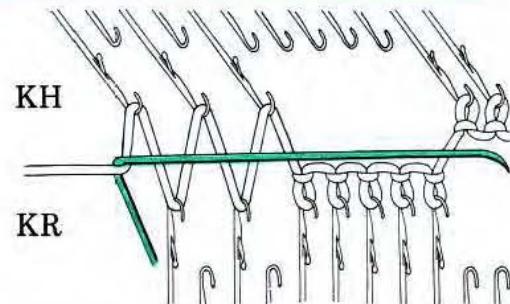
B) When increases are worked only on KH or KR



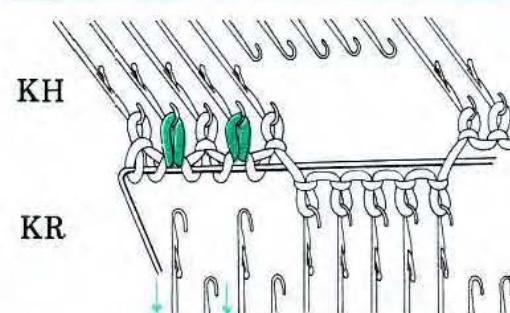
B-1) Place the carriage on the opposite side. Arrange the number of needles to increase alternately on KH and KR as the diagram.



B-2) Move the carriage once. The needles arranged in B position catch yarn. Hang the wire-loop type weight hanger and a small weight.



B-3) Knit 1 row. The newly increased needles knit. Transfer the stitches on KR to KH. (5 stitches have been increased).



★ When increases are desired on KR, reverse the operations.

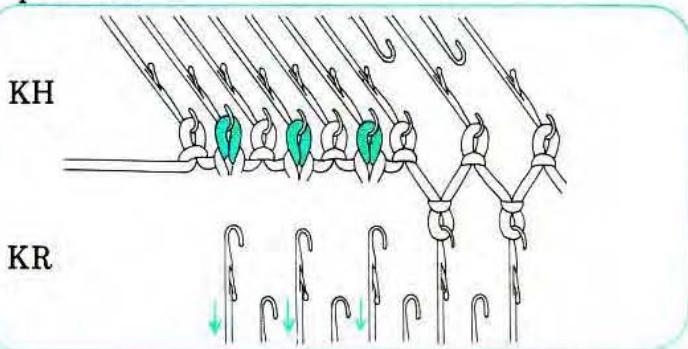
Decreasing more than 2 stitches

When decreasing more than 2 stitches at the side opposite the carriage, the decreased stitches are apt to pull tight. So decreases are worked at the carriage side. First transfer the stitches to be decreased on KR onto the corresponding needles on KH and do as follows:-

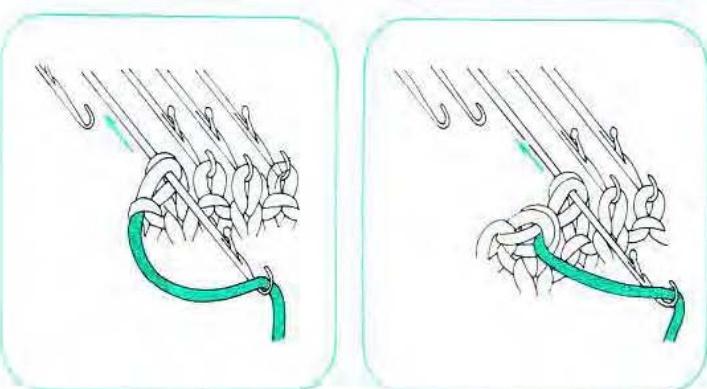
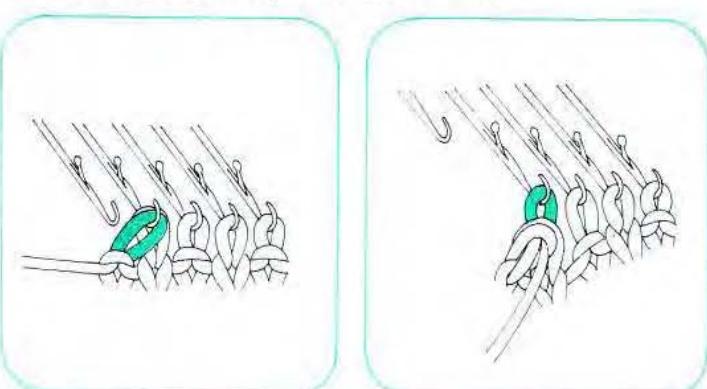
A) 1×1 rib (Half pitch lever on P)



A-1) Transfer the stitches to be decreased on KR onto KH. Push back the empty needles to A position.



A-2) Transfer the edge stitch onto the next stitch and decrease it by cast off stitch.

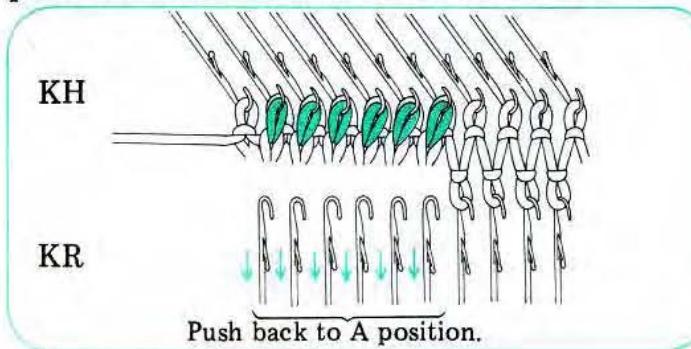


★ Repeat the above to decrease.

B) Full needle rib (Half pitch lever H)



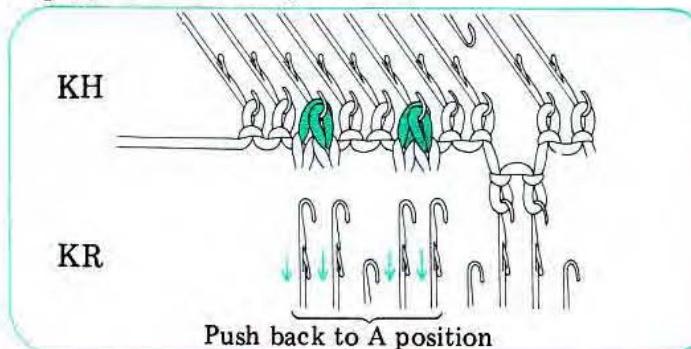
Transfer the number of stitches to be decreased onto the KH. Push back the empty needles to A position. Work the decreases as for 1×1 rib.



C) 2×2 rib (Half pitch lever on H)



Transfer the 2 stitches on KR to the empty needle on KH 2 stitches together. Push back the empty needles to A position.



★ When fewer needles on KR are used, decreases are worked in the same manner by transferring stitches onto the corresponding needles on KH.

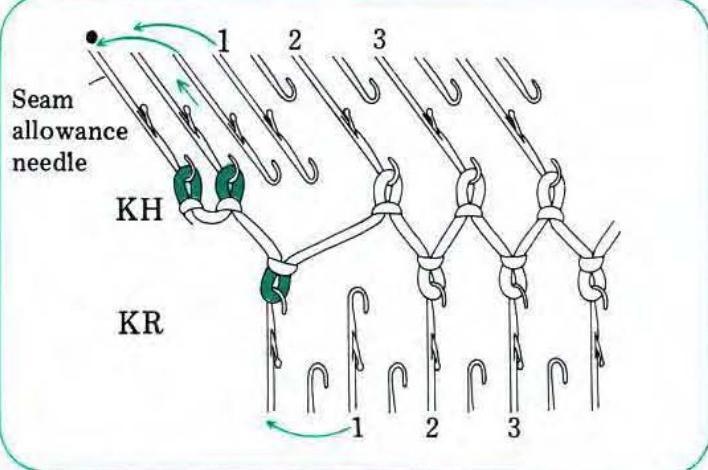
Fully-Fashioned increases and decreases

A) Increases on 1×1 rib (Half pitch lever on P)

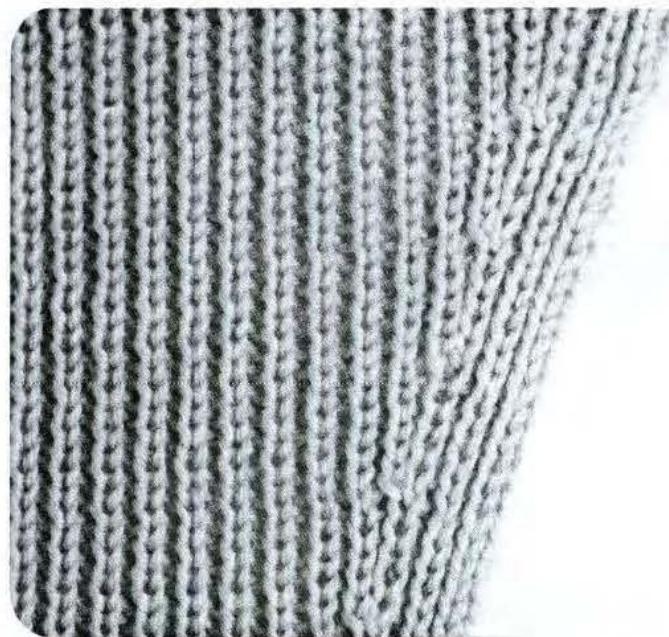
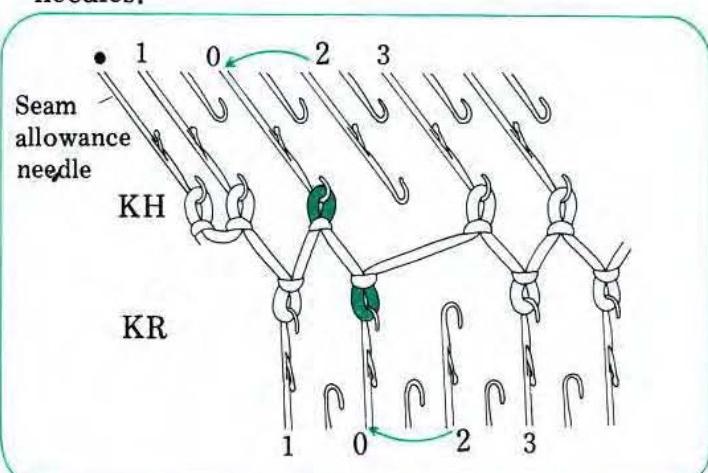
If your Knitleader scale tells you to increase 2 stitches, you should increase 1 stitch on KH and the other on KR. However, on the side to be used as the right side, 1 stitch is allowed for seaming. (In this case KH side is used as the right side).

★ *The edge where the increase is made might pull tight. Push the needle to E position for smooth knitting.*

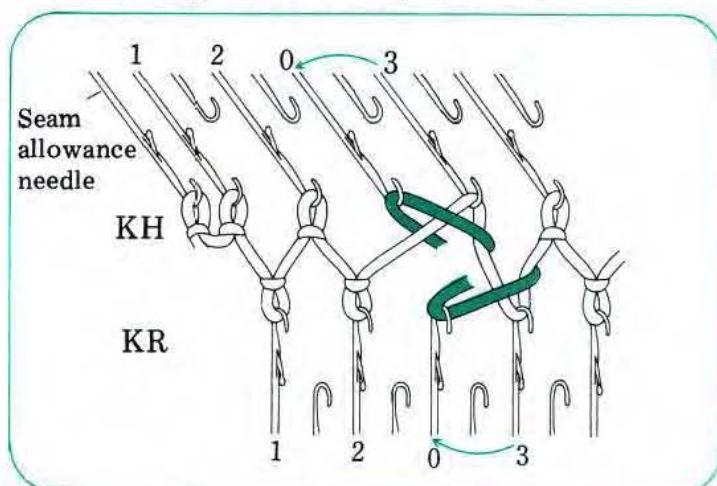
- ① On both KH and KR move out the first stitch (including seam allowance) to the second empty needle, missing out 1. Push back the empty needle to A position.



- ② Transfer the 2nd stitch on KH and KR to No. 0 needles.



- ③ On both KH and KR take the loop of the 3rd stitch and put it onto No. 0 needle.



Knit until next increase and repeat the above operations for fully-furnished increases.

B) Decreases 1×1 rib (Half pitch lever on P)

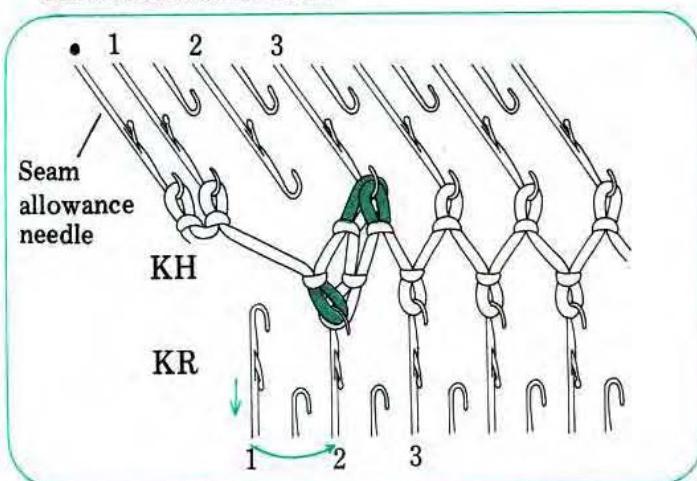
If your knitleader sheet tells you to decrease 2 stitches, you should decrease 1 stitch on the KH and the other on the KR. However, on the side to be used as the right side, 1 stitch is allowed for seaming. (In this case KH side is used as the right side).

★ If the KR side is used as right side, explanations are reversed.

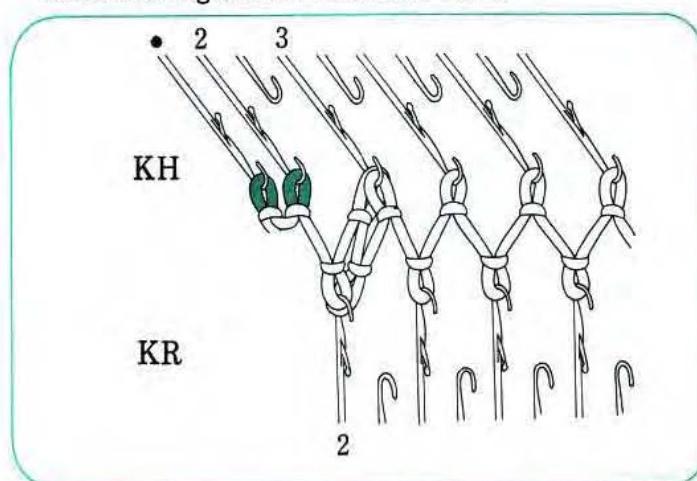


① Transfer the 3rd stitch on KH onto the 2nd needle and move in the double stitch to the 3rd needle.

② Decrease the first stitch on KR by transferring it onto the 2nd needle.



③ Move in 2 stitches on KH to the vacant 2nd needle using a 1 × 2 transfer tool.

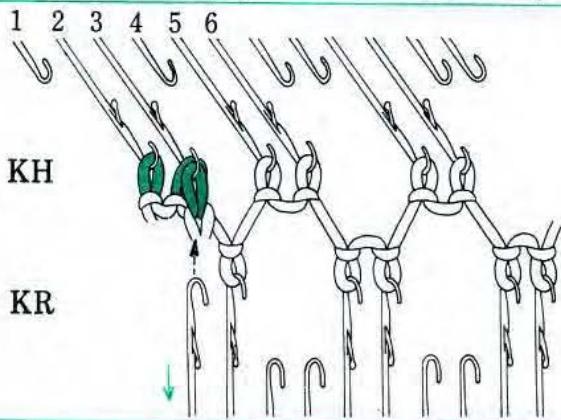


Knit until next decrease. By repeating the above operations you will have fully-fashioned decreases.

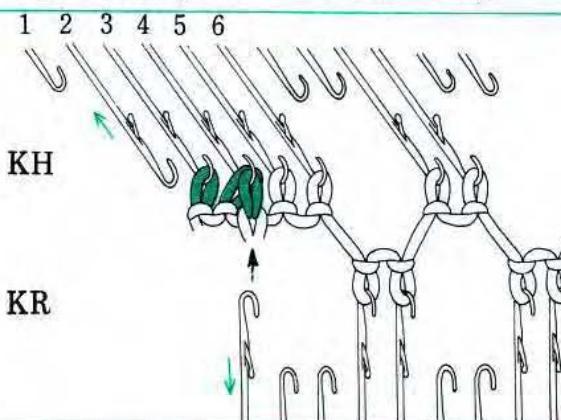
C) Decreases 2×2 rib (Half pitch lever on P)



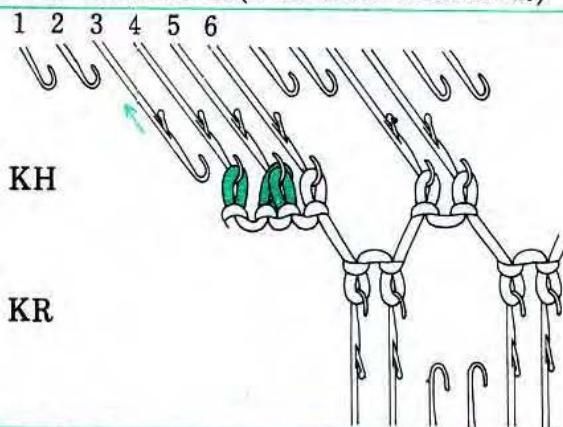
- ①-a) Using a 1x2 transfer tool, move in 2 edge stitches on KH.
 -b) Transfer the edge stitch on KR onto the 2nd stitch on KH. (1 stitch is decreased.)



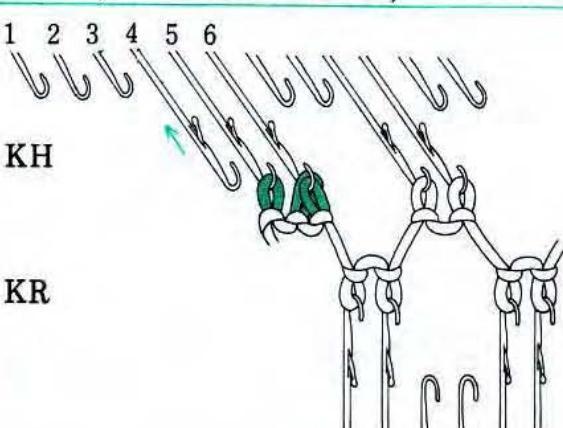
- ② -a) Knit until the next decrease. Then move in the first and second stitch using a 1x2 transfer tool.
 -b) Transfer the first stitch on KR onto the 2nd stitch on KH. (1 stitch is decreased.)



- ③ -a) Knit until the next decrease. Transfer the 5th stitch on KH to the 4th stitch and move in the double stitch back to 5th needle.
 -b) Transfer the edge stitch on the 3rd needle to the 4th needle. (1 stitch is decreased.)

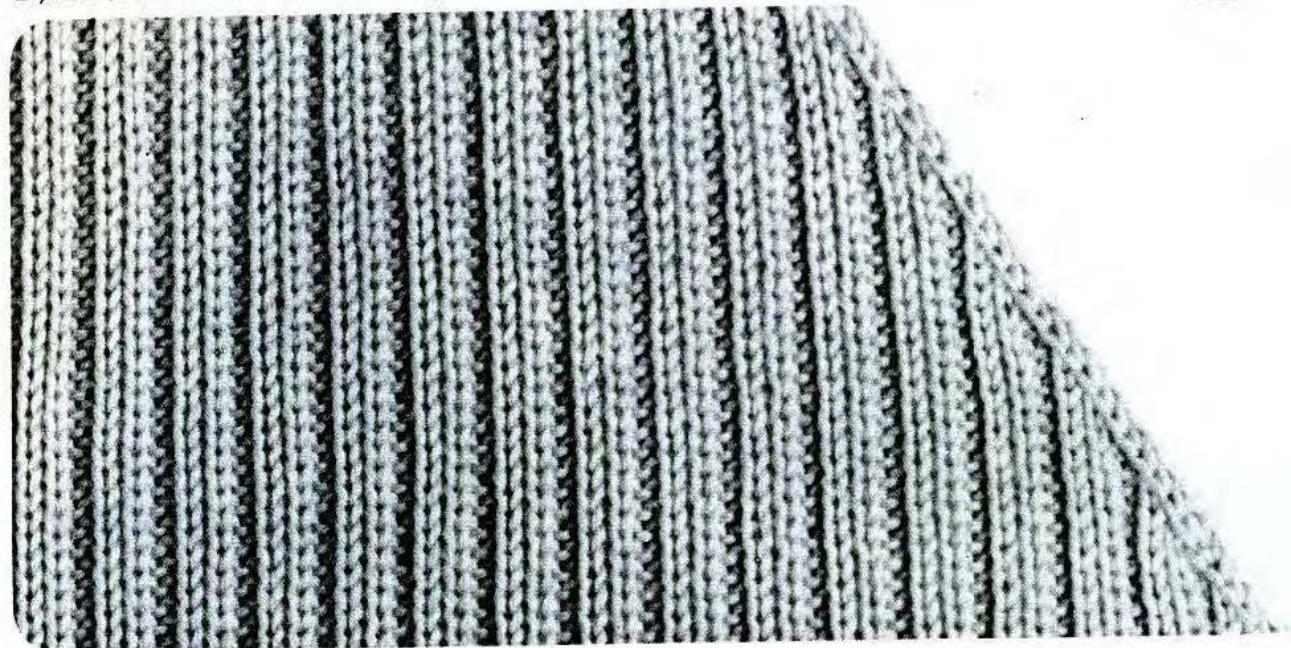


- ④ -a) Knit until the next decrease. Transfer the 6th stitch onto the 5th needle and move in the double stitch to the 6th needle.
 -b) Transfer the 5th stitch onto the 5th vacant needle. (1 stitch is decreased.)

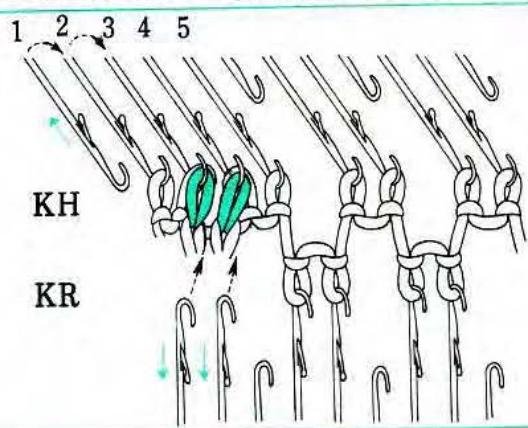


Knit until next decrease and repeat the above to shape your garment with fully-fashioned decreases plus 1 stitch for seam allowance.

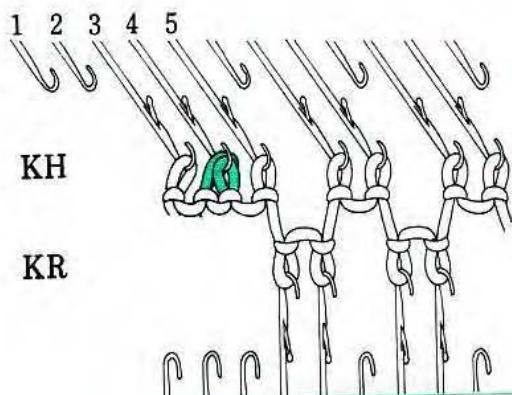
D) Decreases 2×2 rib (Half pitch lever on H)



- ①-a) Using a 1x2 transfer tool, move in 2 edge stitches on KH for 1 stitch space.
 -b) Transfer 2 edge stitches on KR onto the inner stitches on KH. (1 stitch is decreased.)

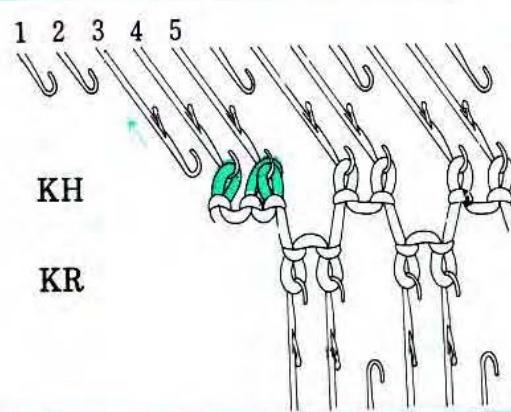


- ②-a) Knit until the next decrease. Transfer the 4th stitch on KH onto the 3rd stitch and move the double st back to the fourth needle.
 -b) Move in the 2nd stitch to the 3rd vacant needle. (1 stitch is decreased.)



★With this needle arrangement 2 stitches on KR are counted as one.

- ③-a) Knit until the next decrease. Transfer the 4th stitch on KH onto the 3rd stitch and move the double st onto the 4th needle.
 -b) Move in the 2nd stitch to fill the empty 3rd needle. (1 stitch is decreased.)



Knit until the next decrease and repeat the above to shape your garment with fully-fashioned decreases plus 1 stitch for seam allowance.

Partial Knitting Techniques

4

1×1 rib

A) Shaping by using holding position

Figure 1.



● 1 × 1 rib

① Set the carriages as the diagram below.

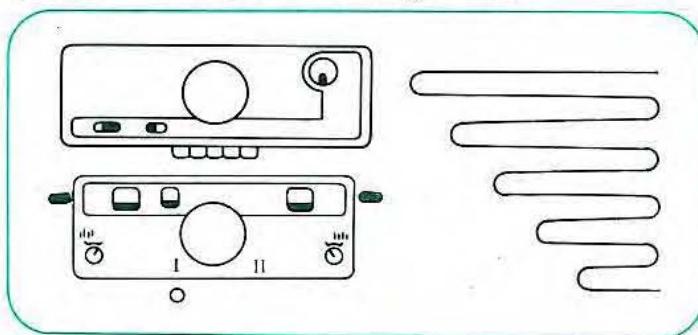


Figure 1: See next page.

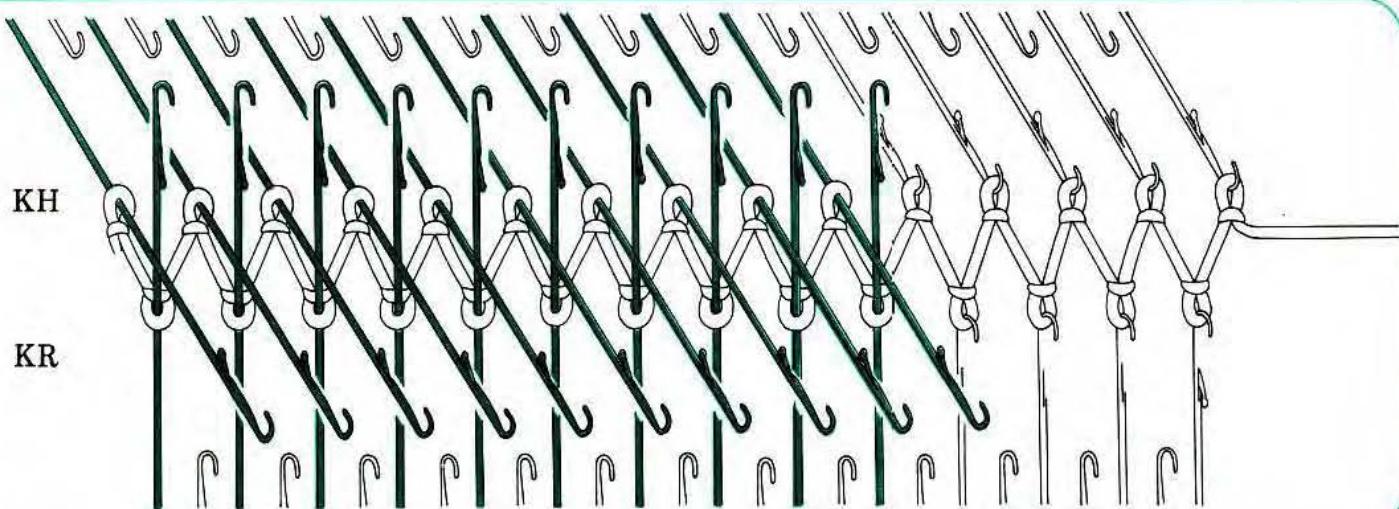
Working in stocking stitch knit to point of change of colour, carriage at right. Place needle at left into E position as ②. Knit 1 row.

Take yarn under first needle from right in E position as ③. Knit 1 row.

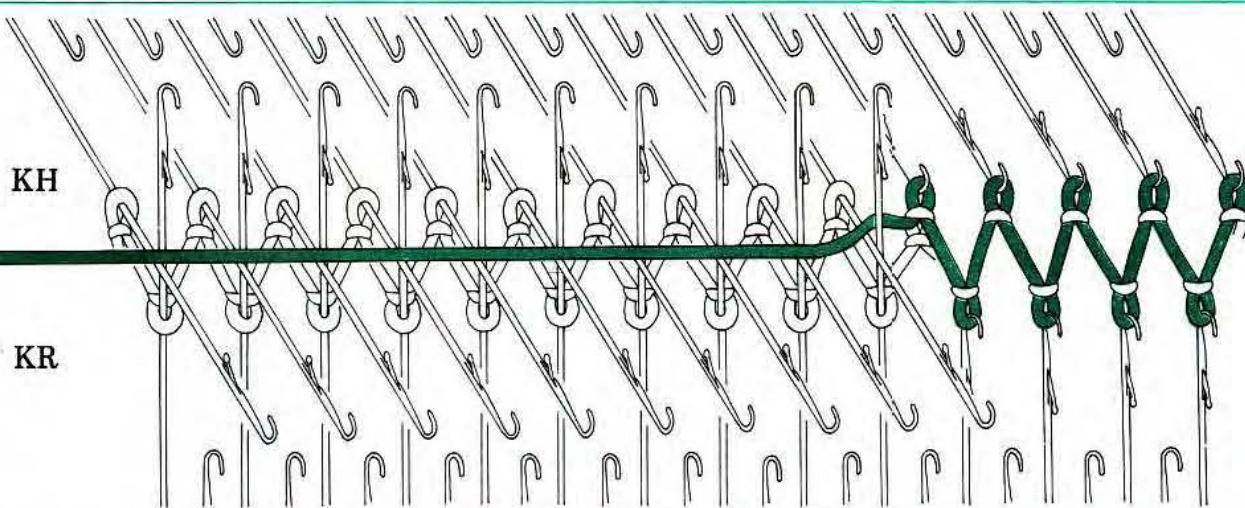
Now take needles back to B position therefore increasing the number of stitches in B position.



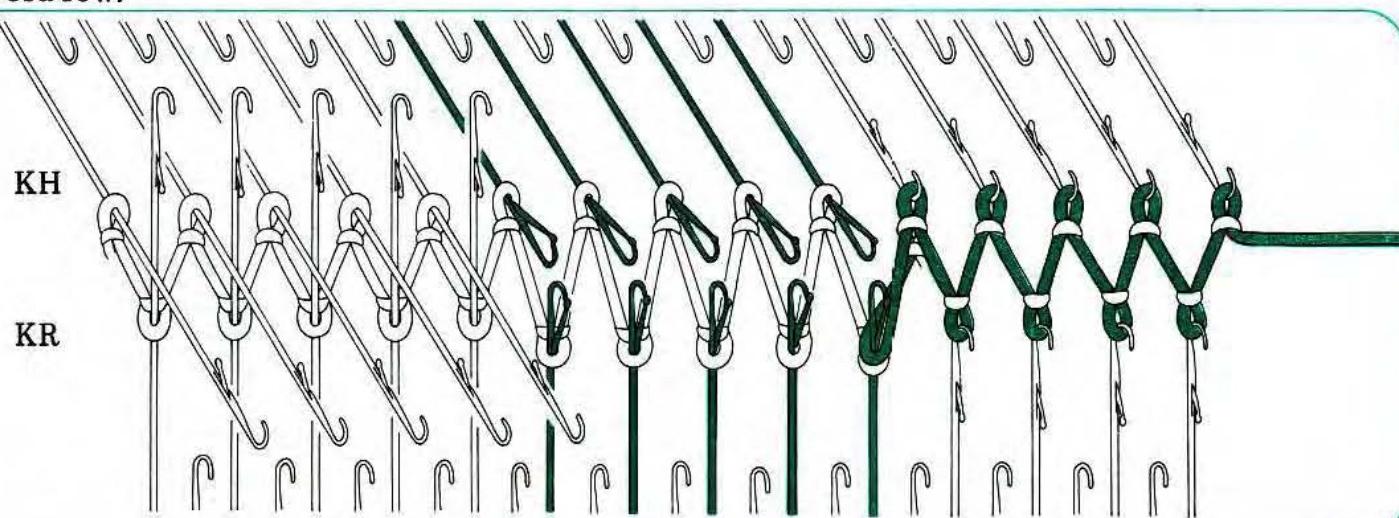
② Push up the needles on KH and KR to E position except those which are to knit.



③ After knitting a row, the knitting yarn rests along the KH and KR needles in E position. Put yarn behind first held needle on KR.



④ Knit 1 row. Read the stitch measure scale and push back the corresponding needles to D position. Knit the 3rd row.



By pushing back the needles to D position you can increase the number of stitches working and shape your garment by partial knitting.

★ For 2 x 2 rib, 5 x 5 rib and full needle rib, when each row is worked in stocking stitch and no racking is employed, partial knitting is done in the same manner as 1 x 1 rib.

B) Shaping by using holding position

Figure 2.



● 1 x 1 rib

① Set the carriages as the diagram below.

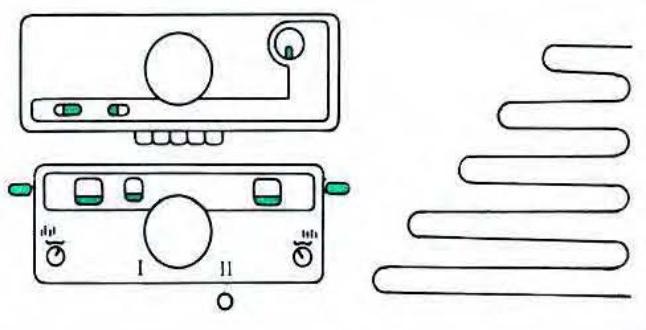


Figure 2: See next page.

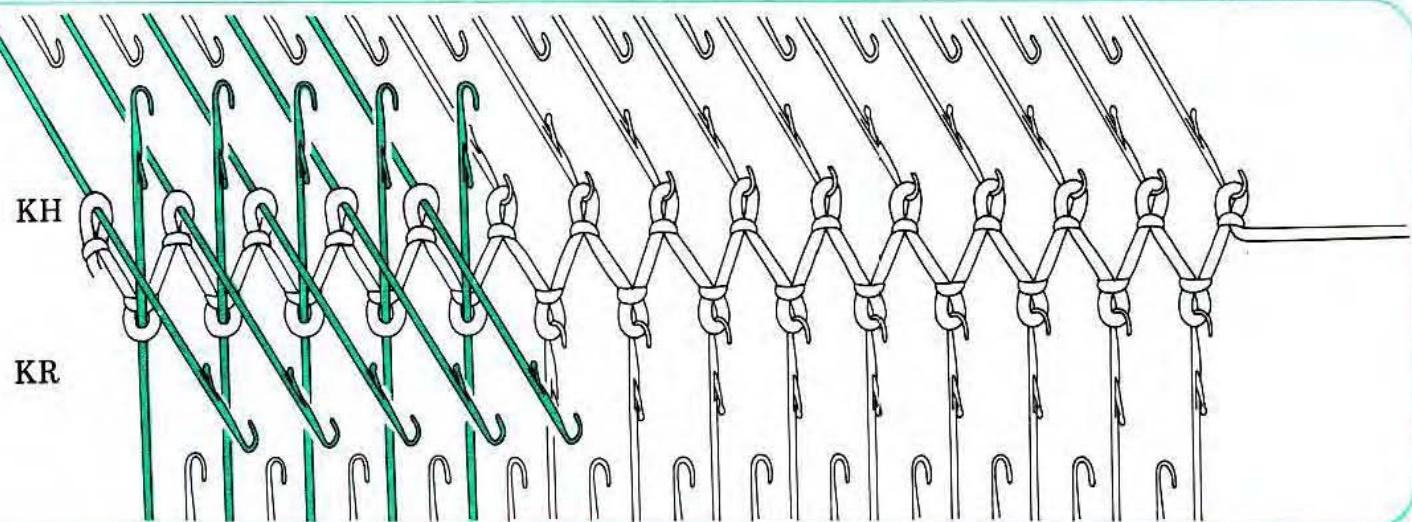
Working in stocking stitch knit to point of change of colour, carriage at right. Place needle at left into E position as ②. Knit 1 row.

Take yarn under first needle from right in E position as ③. Knit 1 row.

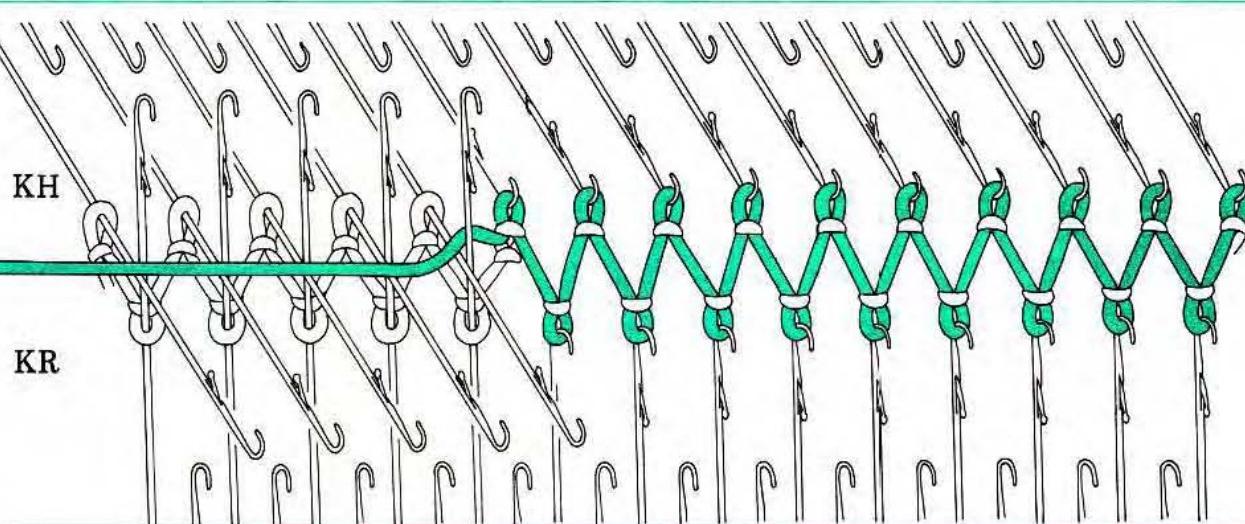
Now push needles to E position therefore increasing the number of stitches in E position.



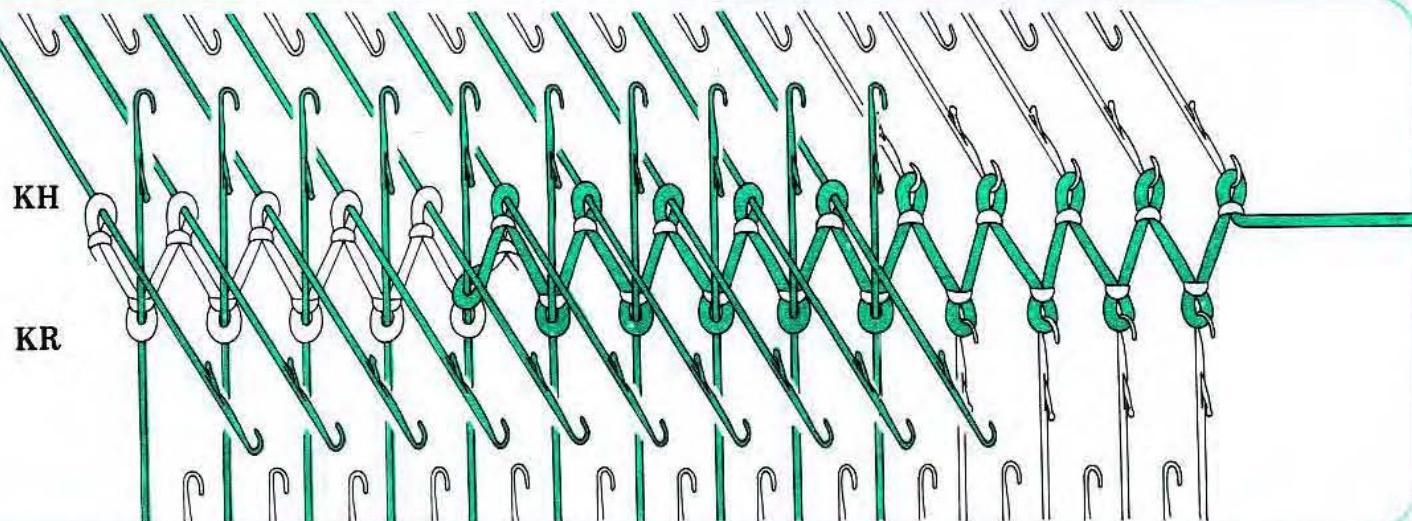
② Reading the graduation of the stitch measure scale, push up the needles on both sides to E position.



③ Knit 1 row. The yarn rests along the needles in E position on both KH and KR. Put yarn behind the innermost needle on KR which is in E position.



④ Knit 1 row. For the second time read the stitch measure scale and push up the corresponding needles to E position. Knit the 3rd row.

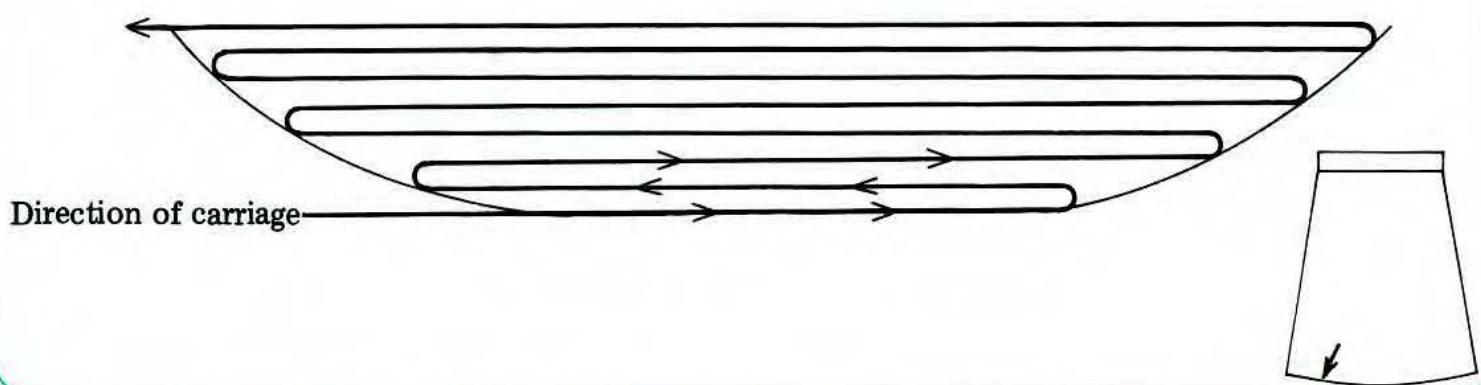


If you continue knitting pushing up needles to E position, you can shape your garment by partial knitting.

* For 2 x 2 rib, 5 x 5 rib and full needle rib, when both KH and KR knit normally and no racking is employed, partial knitting is done in the same manner as 1 x 1 rib.

English Rib (Partial Knitting)

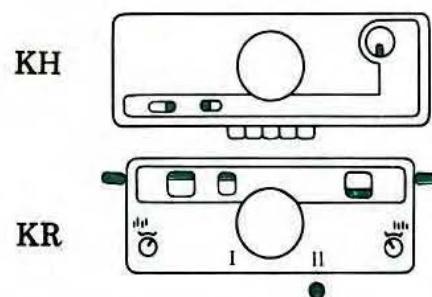
A) Shaping at both ends of the work



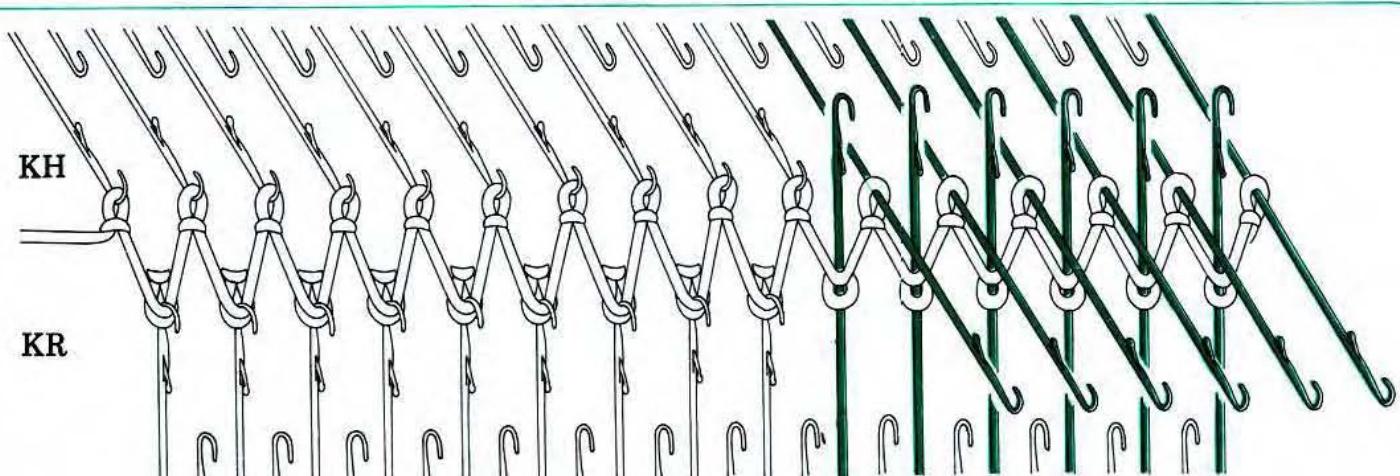
Since English rib is worked by tuck stitches on every other row on KR, the needles to be tucked on the next row should not simply be pushed back to D position. If you do so the needles which are supposed to tuck will knit in plain stitches. You have to put those stitches into the hooks using a transfer tool and push them back to B position. If there are tucked needles and you simply push them back to D position, the stitches are apt to drop off. Therefore those stitches should also be put into the hooks using a transfer tool before you continue partial knitting.

★ Partial knitting by decreasing is worked as 1 × 1 rib.

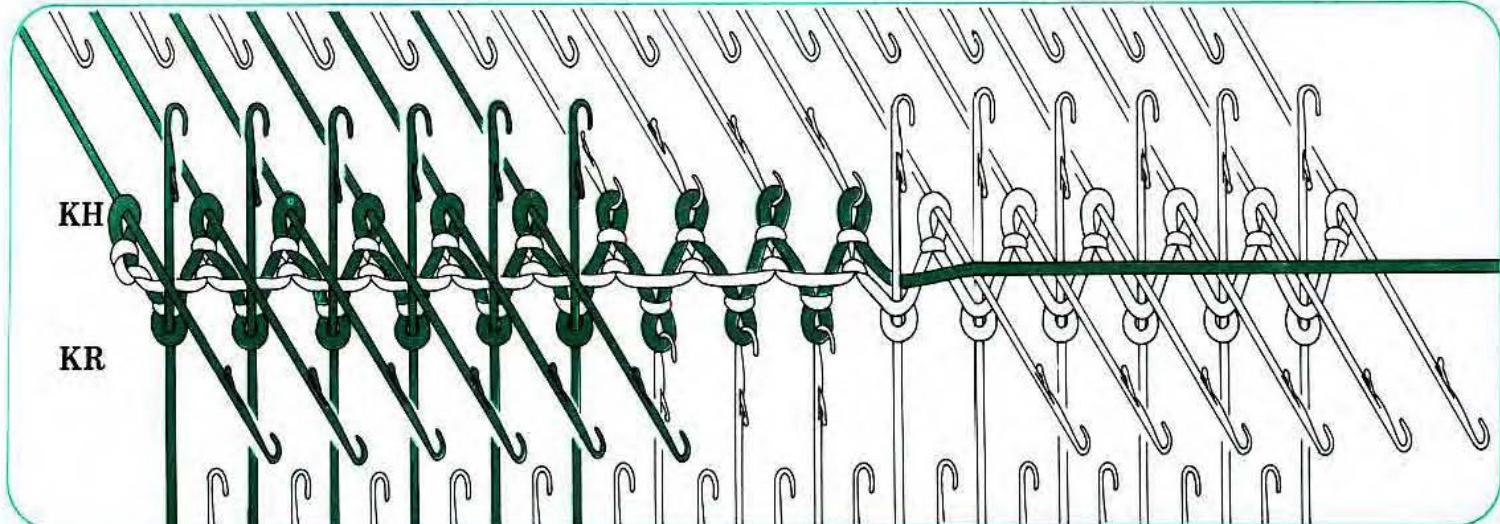
① Set the carriage as the diagram below.



② Push out the needles to E position to correspond with the non-knitting part on the stitch measure scale.

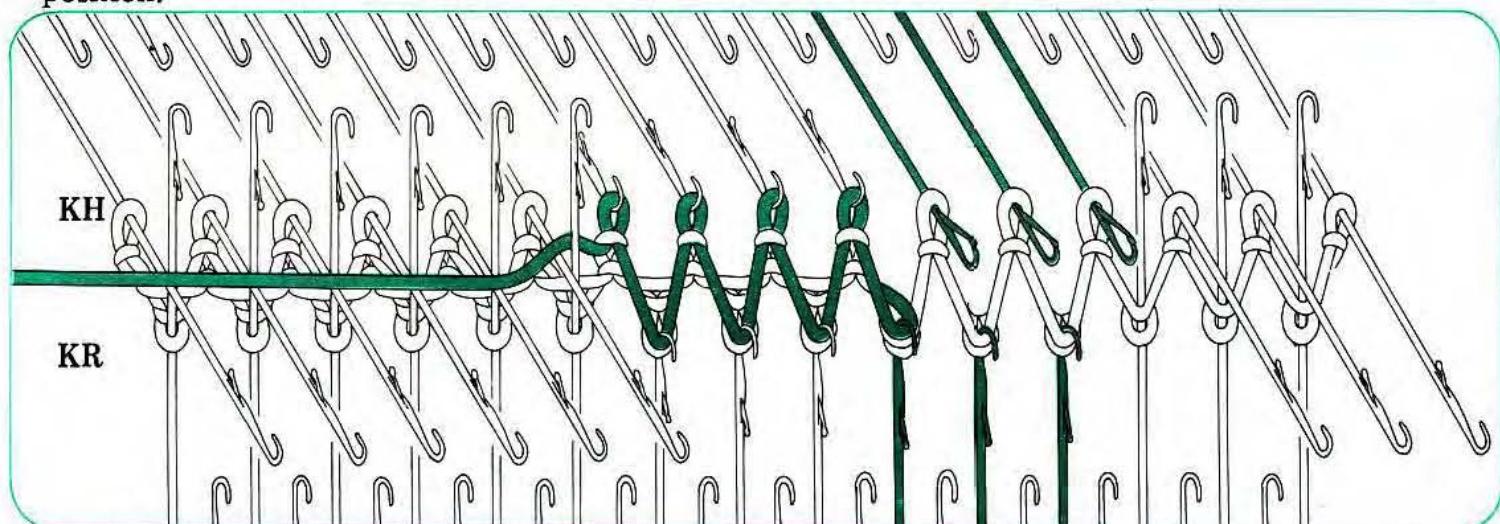


③ Knit 1 row from left to right. Pass the yarn from behind the stem of the first needle in E position and push out the relevant needles on KH and KR to E position, at the side opposite to the carriage.

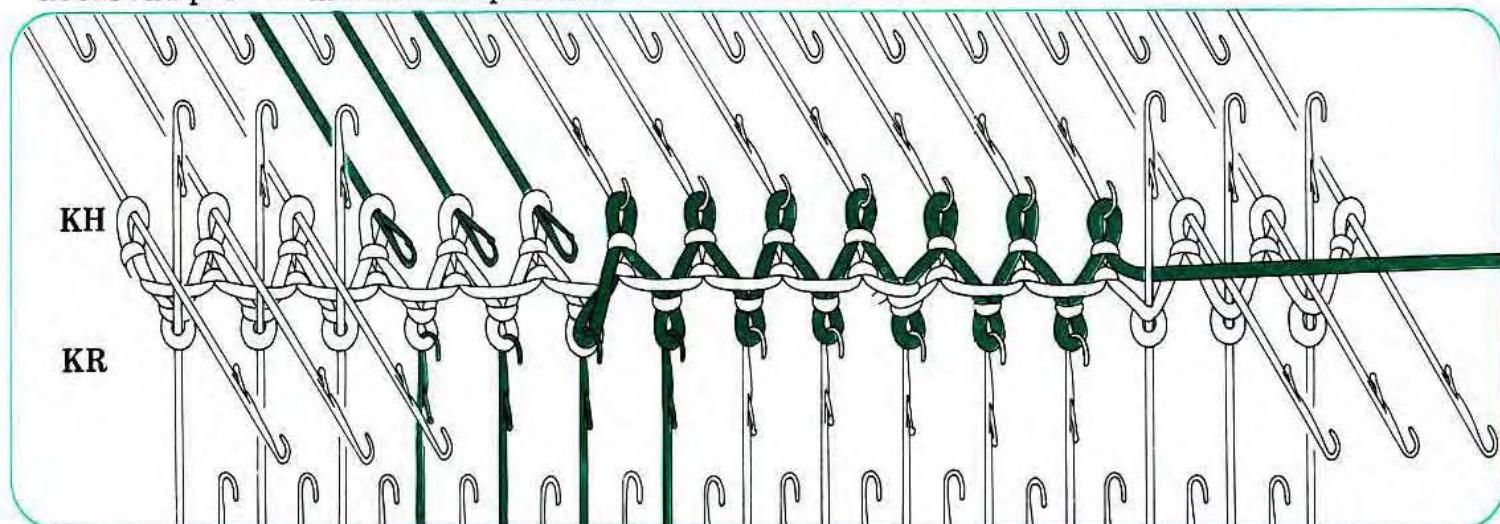


④ Knit 1 row to the left. Pass the yarn behind the stem of the KR needle.

⑤ At the opposite side to the carriage position push back the needles required to knit on KH to D position, and on KR put back the stitches into the hooks using a transfer tool and place the needles in B position.



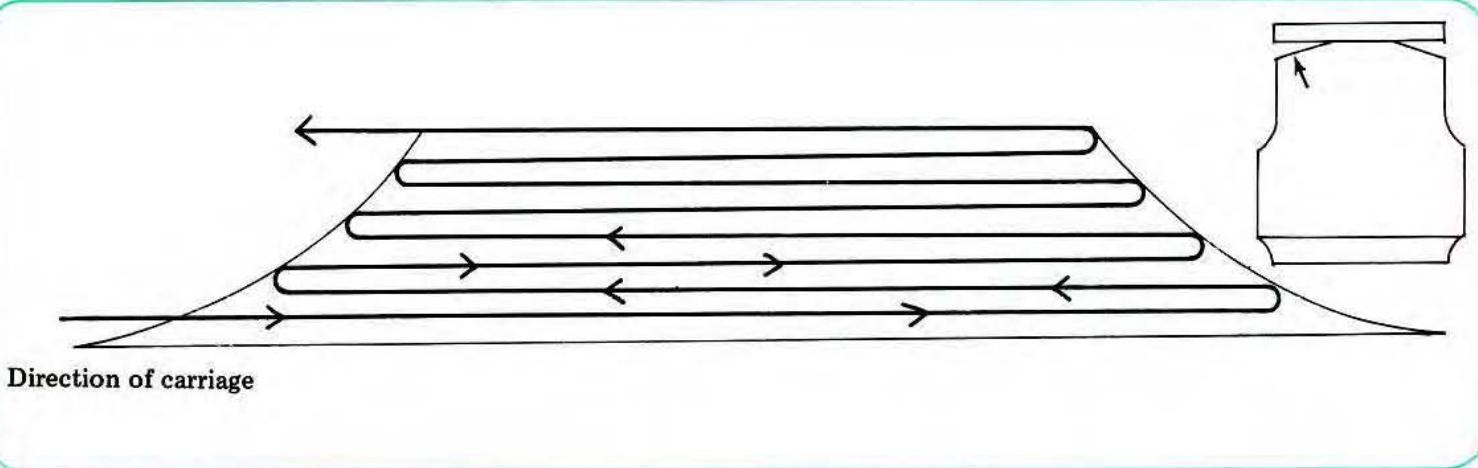
⑥ Knit 1 row to the right. Pass the yarn behind the stem of the first needle in E position, and at the opposite side to the carriage, push back the needles on KH to D position. On KR, put back stitches into the hooks and push them back to B position.



By repeating the above operations (5) and (6) you can shape your garment by partial knitting increases.

Racking pattern in English Rib

A) Shaping at both ends of the work



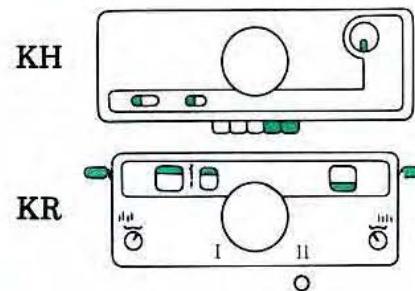
★ To work partial knitting on racking patterns, if the non-knitting needles on KH and KR are placed in E position, they cross one another and the KR bed cannot be racked. So the following method is adopted.

KH bed: Place the needles to knit at E position and push both part buttons.

KR bed: Place the non-knitting needles to E position and set holding cam levers at H.

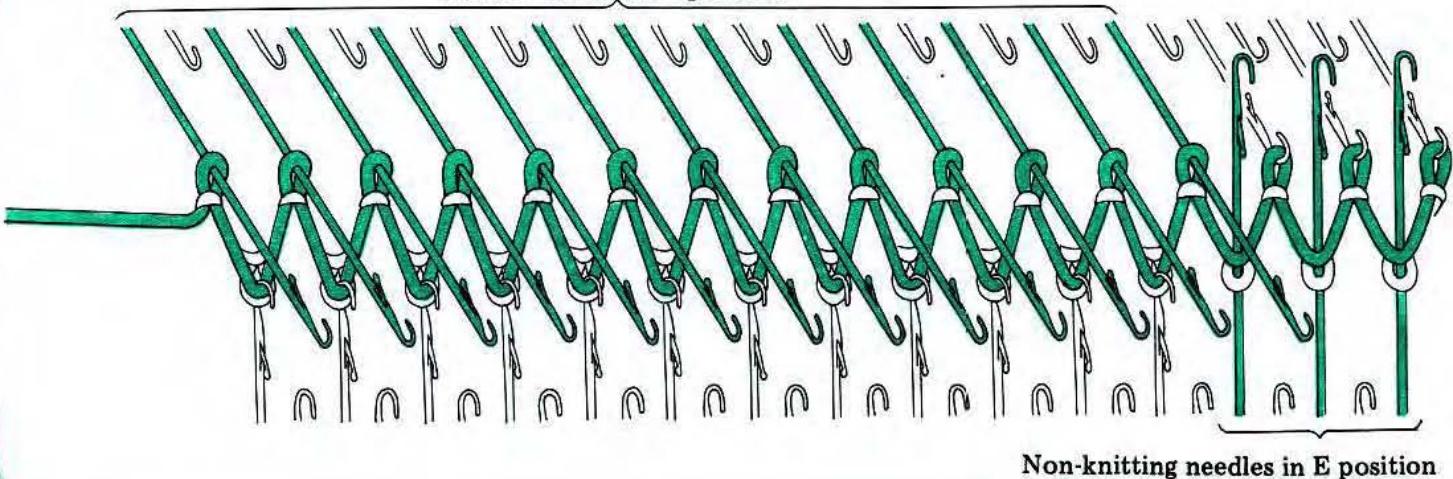
★ Increasing in partial knitting is worked in the same manner as decreasing. However when you return the KR needles, put the stitches back into the hooks using a transfer tool.

① Set the carriage as the diagram below.



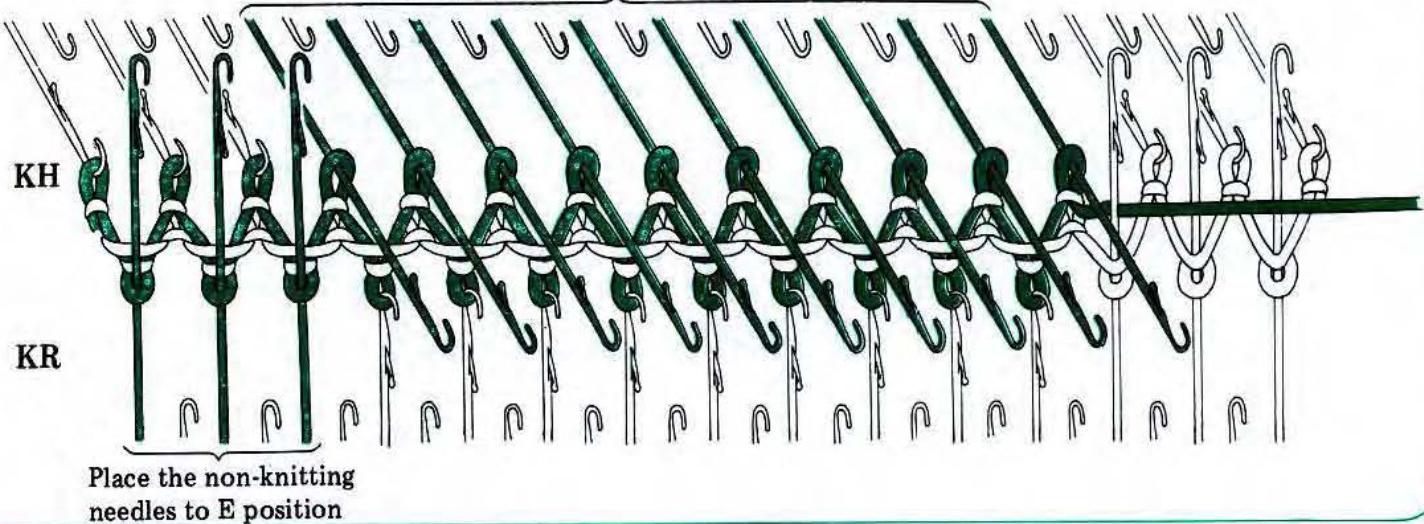
② Push out the needles for decrease on KR (right side) and the needles to knit on KH to E position.

Needles to knit in E position

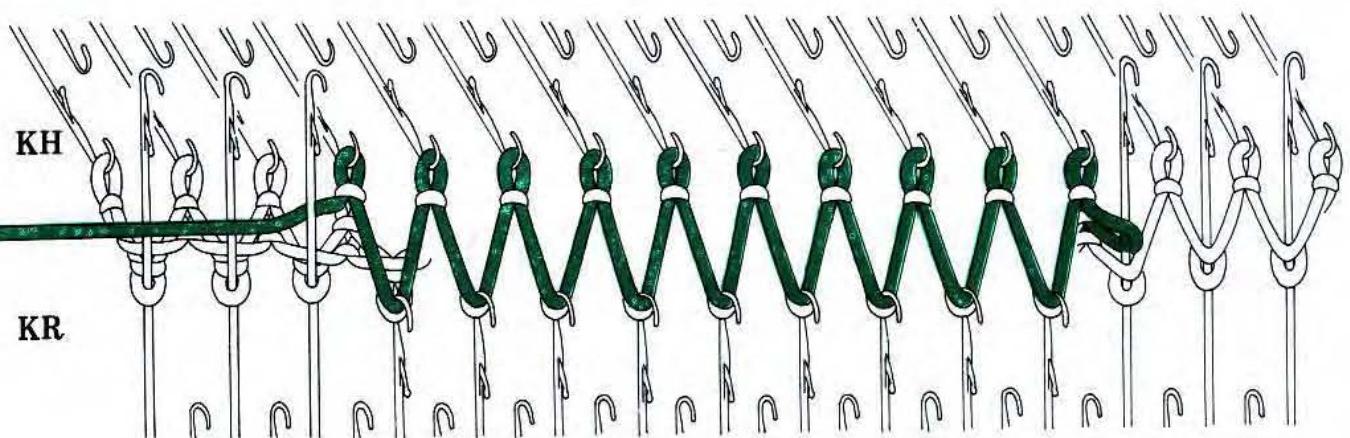


③ Knit 1 row from left to right. Pass the yarn behind the innermost non-knitting needle on KR. Push up the needles for decrease at the opposite side on KR and the needles to knit on KH to E position.

Place the needles to knit to E position

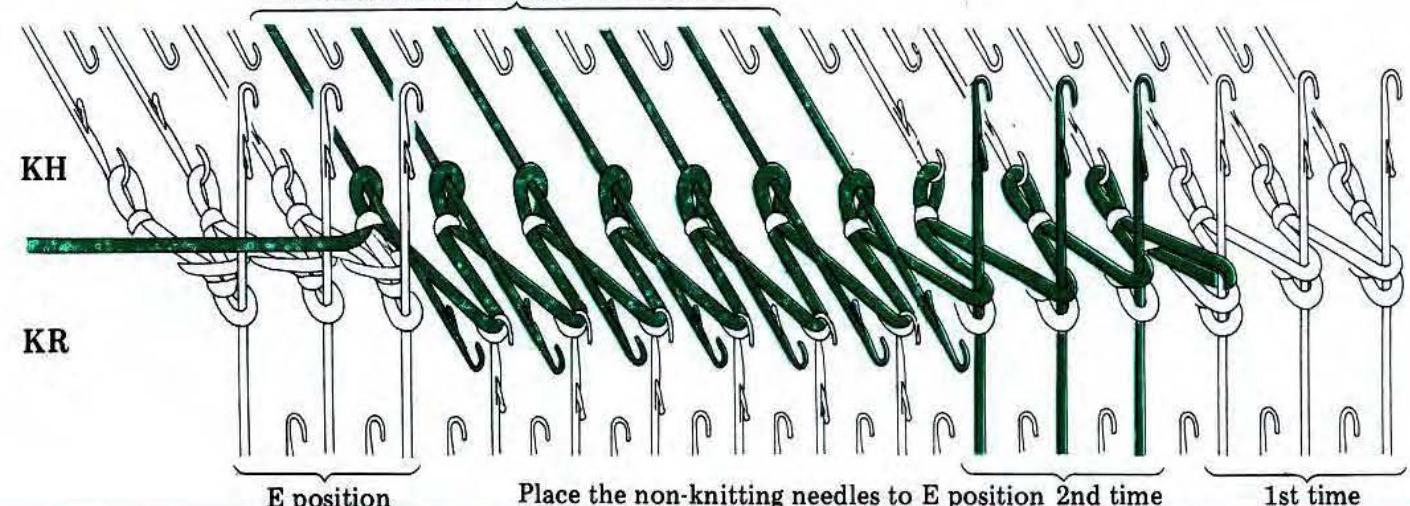


④ Knit 1 row to the left. Pass the yarn behind the innermost non-knitting needle in E position on KR.



⑤ Turn the racking handle 1 pitch to the right (the racking indicator is at 4). At the opposite side of the carriage, place the needles not to be knitted on KR to E position, and the needles to be knitted on KH to E position. Knit 1 row to the right. Pass the yarn behind the stem of the innermost non-knitting needle on KR and knit a row to the left.

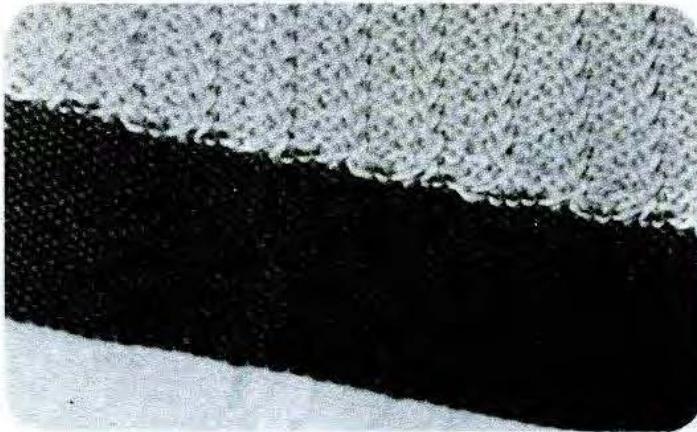
Place the needles to knit to E position



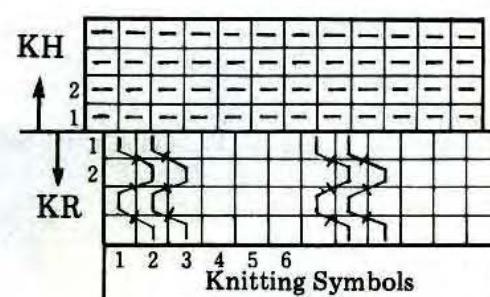
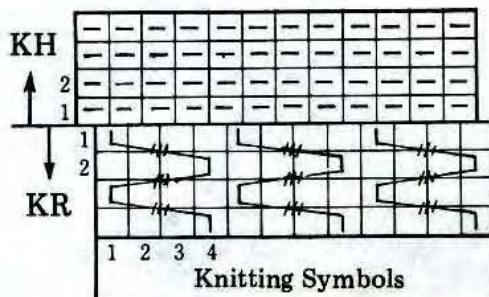
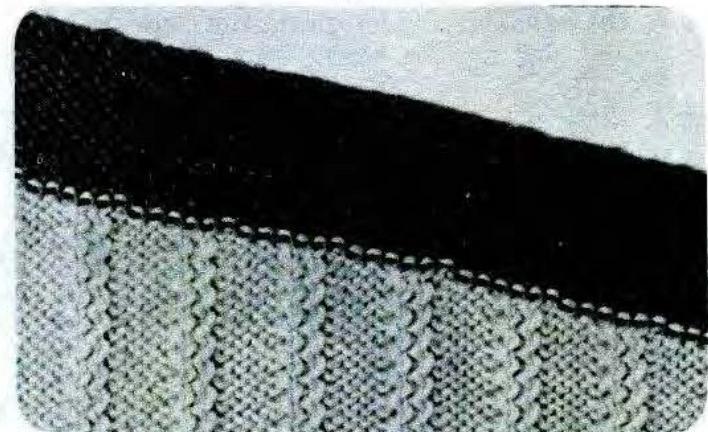
Turn the racking handle 1 pitch to the left (racking indicator at 5) and repeat the above to shape your garment by partial knitting.

Shaping and Racking

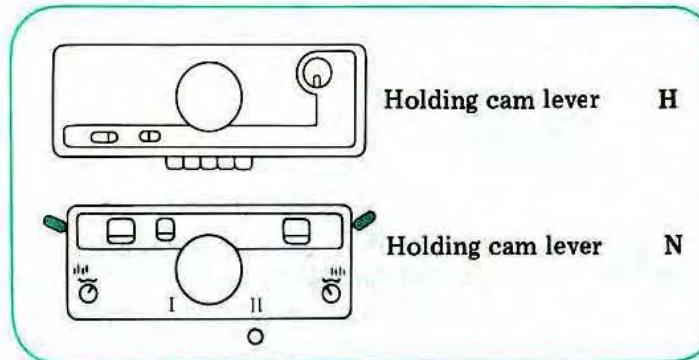
A) Shaping at Right



B) Shaping at Left



● Setting of carriages



● For increasing working stitches

- ① Transfer the stitches on KR which are not going to knit, onto the corresponding needles on KH and push back the empty needles to A position.
- ② The needles on KH which are not going to knit are to be pushed up to E position.
- ③ Knit 2 rows. Push back the needles on KH to be increased to D position. (This time the KR stitches held on the KH needles are to be transferred back to the corresponding needles on KR and placed in B position. After this repeat in the same way.)

● For decreasing working stitches

- ① Transfer the KR stitches which are not going to knit onto the needles on KH and push down the empty needles to A position.
- ② The needles on KH which are not going to knit are pushed up to E position.

★ *The operations are the same as for single bed machines. However, when the knitting continues after partial knitting, as in the case of a side dart, first switch the pattern lever to knit and do as follows:- After the turning stitches have been worked, transfer the KR stitches which have been held on KH needles, back to the corresponding needles on KR and continue knitting.*

4 Things to Know Before You Begin

5

1 How to estimate the quantity of yarn your work

Before you begin to make a garment on the ribber, you will want to know how much yarn you need. Quantities will depend upon type of yarn used as well as stitch and tension, but the following will act as a rough guide.

Based on the amount of yarn for a plain stocking stitch garment, a 1x1 rib needs 20% extra and a 2x2 rib about 30% extra. For full needle rib and tuck stitches, allow 70% more.



2 How to use the tension dial

Even when Tension dials on the KH and KR are set to the same number, the KR always makes smaller size stitches. For normal ribs this may not matter too much. However, for circular knitting and U-type knitting where you are producing stocking stitch on both beds, the tensions on the KH and KR must match otherwise one part will be longer and wider than the other. So either the KR can be set to a looser tension, or the KH to a tighter tension. In certain cases this difference between KH and KR is purposely used to produce special pattern effects.

1 For the same size stitch on both KH and KR

[Example]

Before working a garment in either circular or U-type knitting, you should know the difference in tension of your KH and KR beds.

● How to find out the difference in tension

- ① First of all knit a sample piece using the same tension dial number on both beds. Count the number of stitches and rows on each side.
- ② Depending on the difference in tension, either increase the KR dial tension to make those stitches larger, or reduce the KH dial tension to make those stitches smaller.
- ③ Make further samples adjusting dials gradually one point at a time until matching tensions are achieved.

● For circular knitting



2 For tighter tension on KR

[Example]

When working a racking pattern with fewer needles on KR, a better finish is obtained if the tension dial on KR is tightened by 2 - 3 numbers.

3 For looser tension on KH

[Example]

When you work pin-tuck patterns, loosen the tension dial by 1 - 2 numbers on KH.

Ribbing worked on the KR is tighter and more even than stocking stitch knitted on the KH and rib by hand using the latchet tool.

The positioning of Slide Levers on I or II makes a difference in tightness too, so you can choose which setting you want according to the type of stitch pattern you are knitting.

I - (looser setting) for soft, stretchable fabrics.

II - (tighter setting) for firm, denser fabrics.

The difference between the two settings is equivalent to approx. 2 - 3 numbers on the dial.

3 How to make good use of the weights

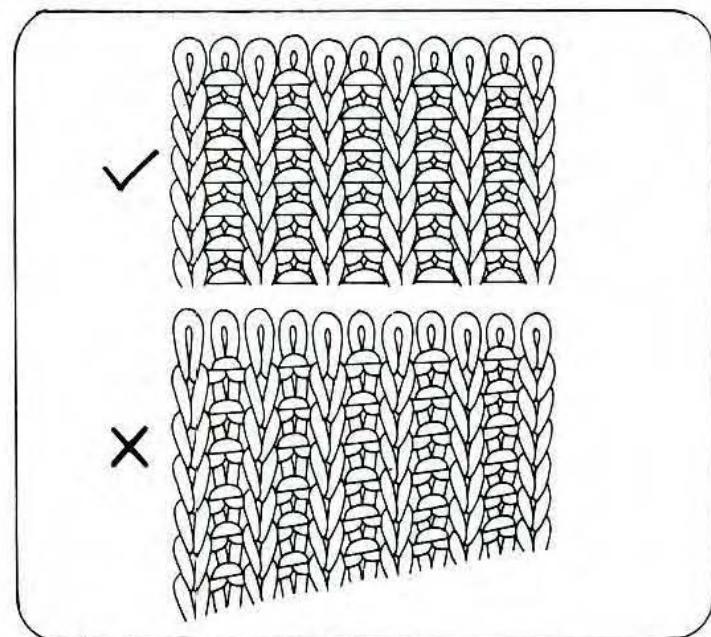
All forms of ribbed knitting need to be weighted correctly for the stitches to form evenly and to prevent them from lifting off the needles. So it is important that you use your weights correctly.

● The number of weights to use

Though the standard number of weights are given in the following list, the number can vary according to the materials and the kind of stitches used. Where possible, use the minimum weight necessary for correct stitch formation.

No. of sts	Weights (large)	Weights (small)
~ 50 sts	1	—
50 ~ 100	2	—
100 ~ 150	3	2
150 ~ 200	4	2

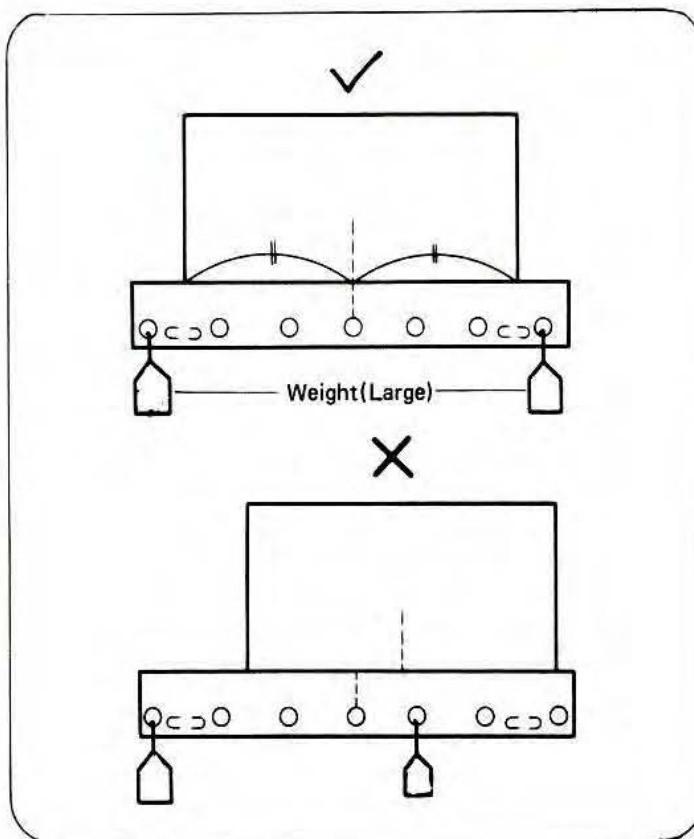
Generally, thick yarn or full needle rib requires a little more weight. But when fine yarn or fewer needles are used, care should be taken not to use too many weights. If too much weight is used, the loops are pulled tight and the stitches cannot slide over the needle latches resulting in stitches piling up on the needles.



out lopsided (see diagram above) and it will be impossible to correct this afterwards even with an iron. Therefore special care should be taken to weight work evenly right from the beginning.

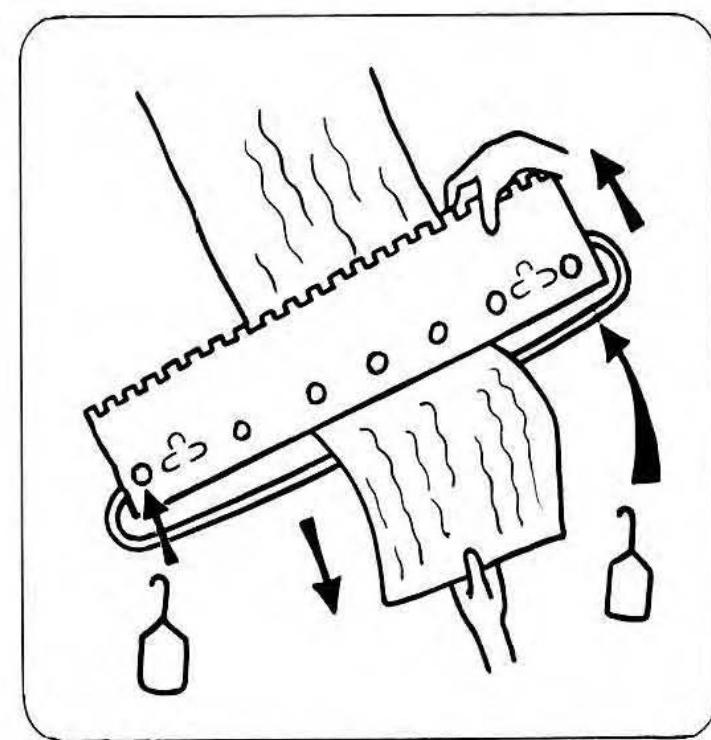
● Even distribution of weights

The weights should be hung so that the cast-on comb hangs level. Always hang the weights in the holes outside the edges of the garment. Knitting worked on an uneven comb will turn

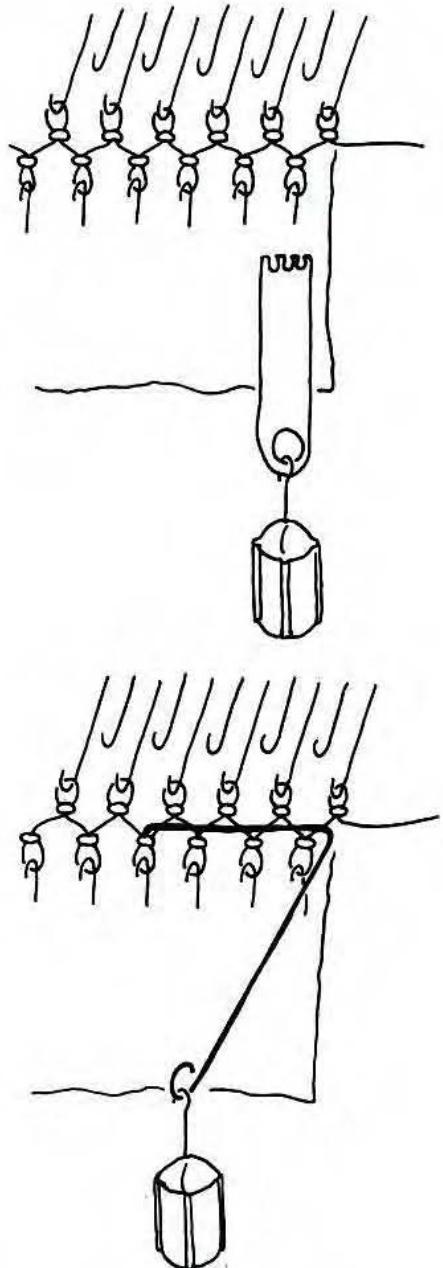


● When to re-hang the comb and weights

If you continue knitting once the weights touch the floor they will no longer have any effect. The knitting will lift and stitches will pile up. Before this happens, re-hang the cast-on comb and weights as before (see instruction manual).



The edges of ribbed knitting are apt to stretch so reducing the effect of the weights. Symptoms of this are dropped or badly knitted stitches. To prevent this, use a small weight with an L-shaped wire weight hanger or a claw weight to hold your knitting down. Re-position these edge weights every 30 - 35 rows, or as needed.



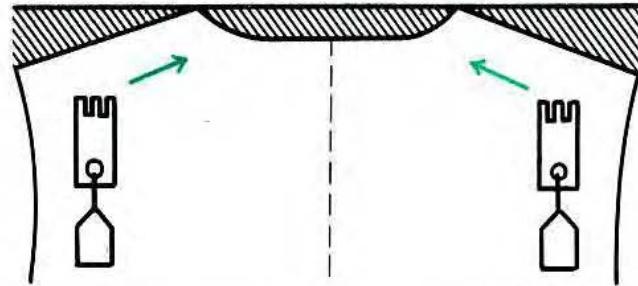
● How to position the weights when working partial knitting

If you work partial knitting with the weights evenly spaced, the knitted part will lift and cause dropped stitches. In such cases you can use an L-shaped wire weight hanger and a small weight, or a claw weight on that section as follows:-

● When partial knitting is worked at the end of the knitting

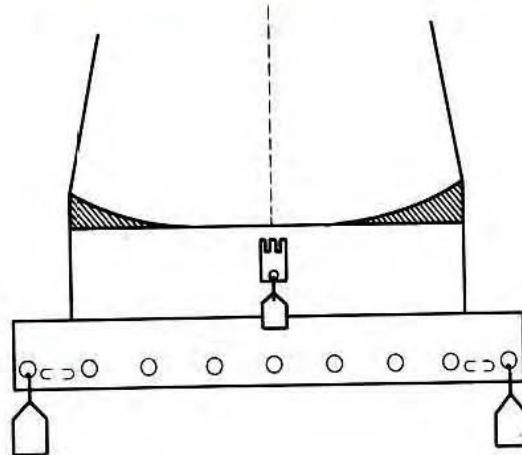
Remove all the weights on the cast-on comb. Put a claw weight on the part where partial knitting is to be employed. You will have to change the position of the weights as the partial knitting advances.

An example of partial knitting of shoulders.



During partial knitting, re-position claw weights every few rows to prevent the fabric from lifting up. Extra tension can also be given temporarily, by pulling the knitting down with your left hand.

● When partial knitting is done in the beginning



When the number of rows for partial knitting is more than this, increase the amount of waste knitting.

● Other hints

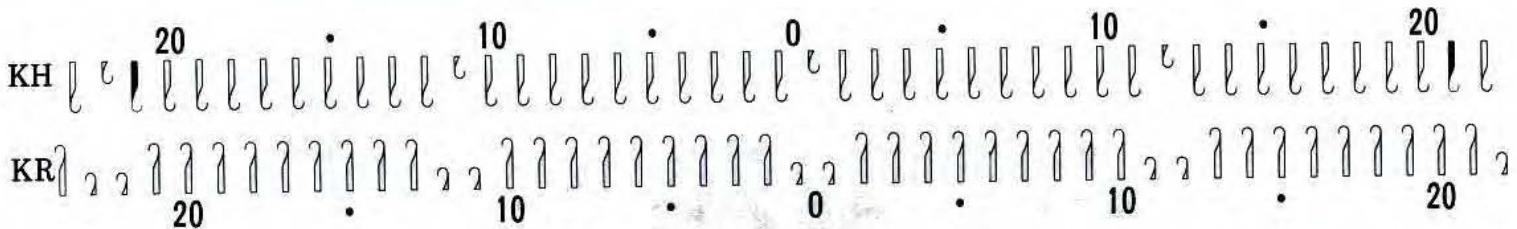
● Weights are necessary only whilst you are actually knitting. Therefore when you are not going to knit for some time, be sure to remove them otherwise the garment will be stretched unnecessarily.

● If a stitch or some stitches have dropped, first remove the weights to prevent the stitches running down further. Then pick up the dropped stitches and put them back onto the needles. Don't forget to replace the weights before you carry on knitting again!

4 How to make and measure a tension swatch

Since a garment worked on the double bed machine has more elasticity compared to the single bed machine, it is necessary to be very careful when taking the tension, or your finished garment will be the wrong size. Bear the following in mind when making and measuring your tension swatch.

- ① Make a tension swatch a little larger than for a single bed machine.
- ② For long pieces like tights and welts or bands, if your swatch is nearly the same size as the finished article, measurements can be taken more accurately.
- ③ After the tension swatch has been made, pull it lengthways and widthways. Then press it very lightly with a steam iron or according to yarn label. Leave swatch to let the stitches settle naturally for at least 1 hour.
- ④ When you knit with your KR, the needle arrangements on KH and KR will be different depending upon the kind of stitch pattern. When you count the number of stitches, count them on the KH only, including the empty needles, no matter how many needles on KR are in working position. The markers for 40 stitches are put on 21st needle on each side of 0. In the same manner as with single bed machines, measure the space within the 40 stitches.



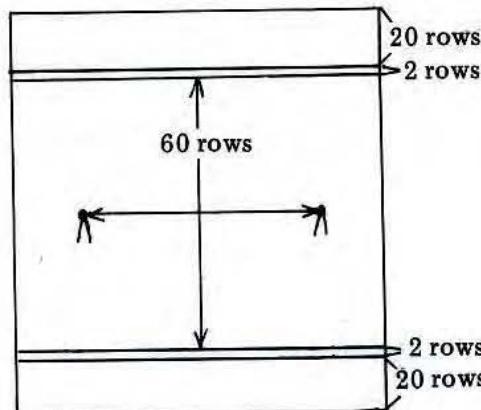
If there is no stitch on the 21st needle on the KH, put the marker on the 21st needle on the KR. When there is no stitch on the 21st needle on both beds, pick up a stitch on KH or KR nearest to the 21st needle and knit another 2 rows. Now return that stitch back to its original needle. Push back the 21st needle to A position.

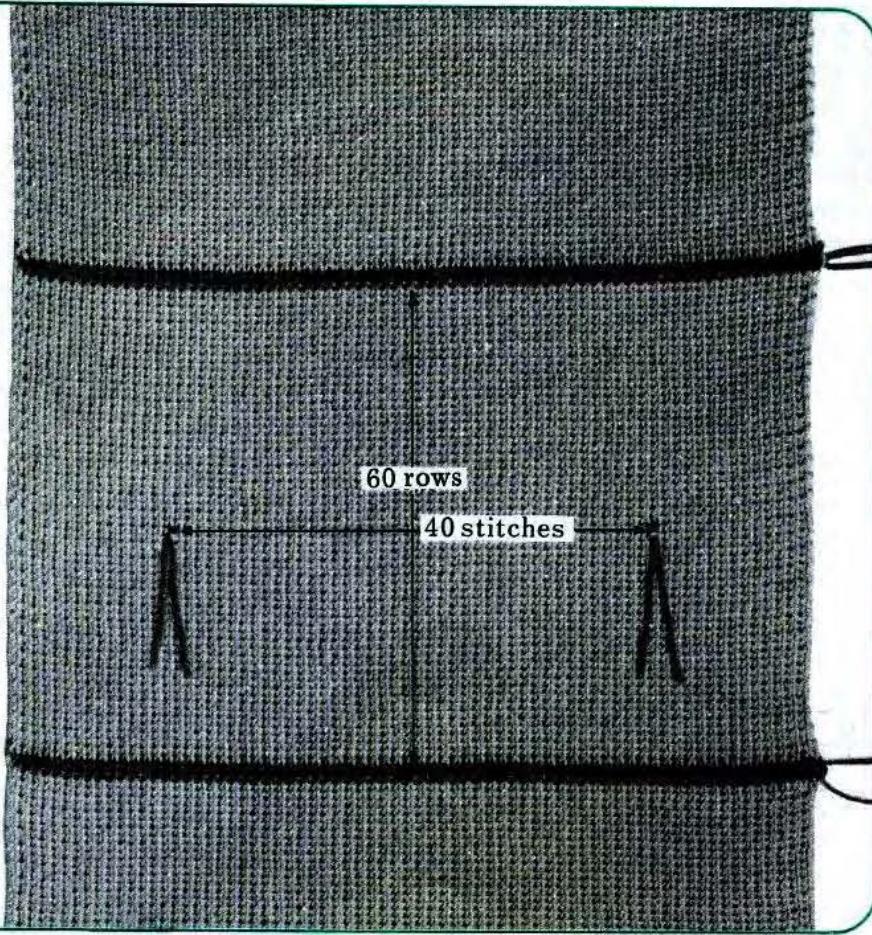
Tension swatch for different shapes

① Square

● How to work a tension swatch

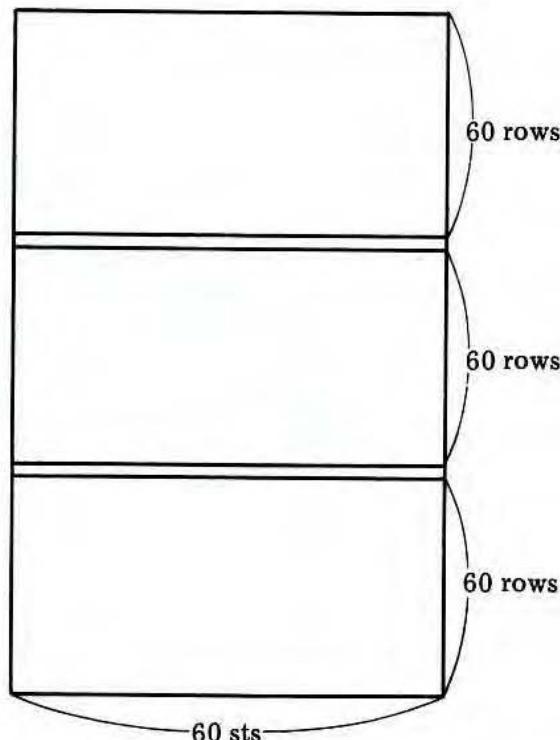
- ① Put 60 stitches to working position. After the casting on has been worked, transfer the stitches according to the pattern you have chosen.
- ② Set the stitch dial and the cam lever to the position suitable for the yarn and the stitch pattern. Knit at least 20 rows in pattern using main colour.
- ③ Knit 2 rows in contrasting colour. Knit 30 rows in main colour.
- ④ On KH push up 21st needle on each side, left and right, to E position. Lay contrast yarn in the hooks and push them back to B position. Pull the ends of the contrasting colour yarn down between the KH and KR beds using a hook tool.
- ⑤ Knit 30 rows more, making a total of 60 rows. Then knit 2 rows in contrasting colour.
- ⑥ Knit at least 20 rows in main colour. Remove weights and release the swatch from the machine.





● How to measure the tension swatch

First of all press the swatch according to yarn label.



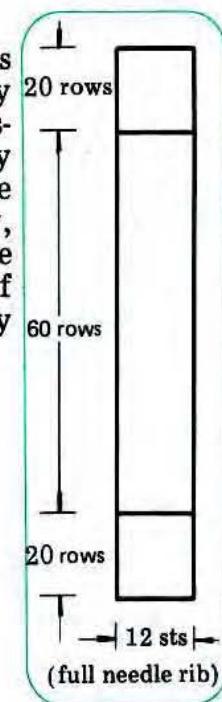
② For long garments (Trousers, dresses etc and band)

● How to measure the tension swatch [Example 1]

- ① Work the swatch 3 times as long as usual and measure 60 rows at 3 or 4 places and take their average value.
- ② After the tension swatch has been made, press it according to yarn label, leaving it to cool.

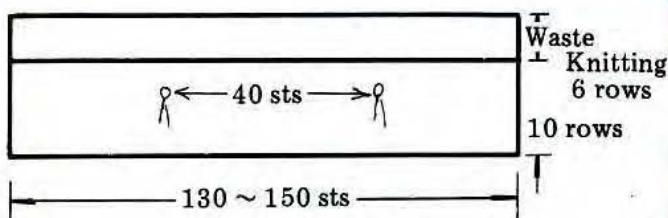
[Example 2] Vertical band

To calculate the number of rows needed for a vertical band firstly make a tension swatch as illustrated on the right. Press lightly with steam iron at the same time pulling it lengthwise slightly, then measure 60 rows. The number of stitches for width of band can also be determined by referring to swatch.



③ Horizontal band (welts, neckbands etc.)

Make a tension swatch as shown in diagram below. Stretching it slightly in a sideways direction, press it very lightly with a steam iron. Then measure the 40 stitches.

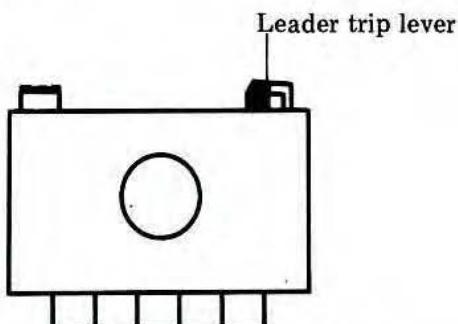


④ For multi-colour rib, English rib and circular knitting (Knitleader settings)

For tensions where 60 rows measure less than 6 cms the Knitleader trip levers should be set to turn the sheet up every other row. (For example if 60 rows measure 5.6 cm, double this figure = 11.6 cm and enter this figure into KL. Two knitted rows will then equal one movement of KL sheet.

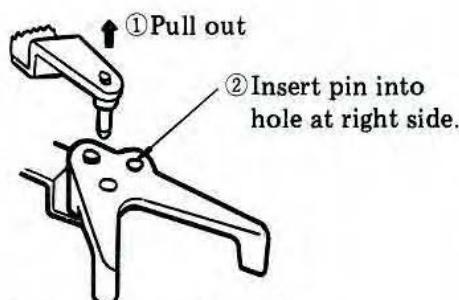
For every other row

Built-in knit leader



As it is divided into halves push in left half when you use it.

Knitleader attachment



Place pin into the hole on the right and knit.

Processing your swatch

Pull the swatch lengthways and widthways to make the stitches close up before ironing. For each swatch keep the following points in mind and press very lightly according to yarn label.

① Rib knitting and English rib

These garments have a tendency to stretch sideways. Therefore when taking measurements stretch swatch until the purl stitches can be seen and pin it. As it is pulled sideways the length will be reduced. Therefore measure the length of the swatch before stretching it sideways. Measure 40 stitches and 60 rows.

For 1 x 1 rib

Stretch the swatch until half the purl stitch can be seen, then press it very lightly according to yarn label.

2 x 2 rib

Stretch the swatch until one complete purl stitch can be seen, then press it very lightly according to yarn label.

Full needle rib

Do not stretch swatch sideways. Press very lightly according to yarn label lengthwise.

English rib

Press according to yarn label being careful not to crush the stitches.

② Racking stitch

When only a few needles are used on the KR the garment has a tendency to drop. So stretch the swatch lengthways about 10% and press according to yarn label, then measure as shown (take gauge).

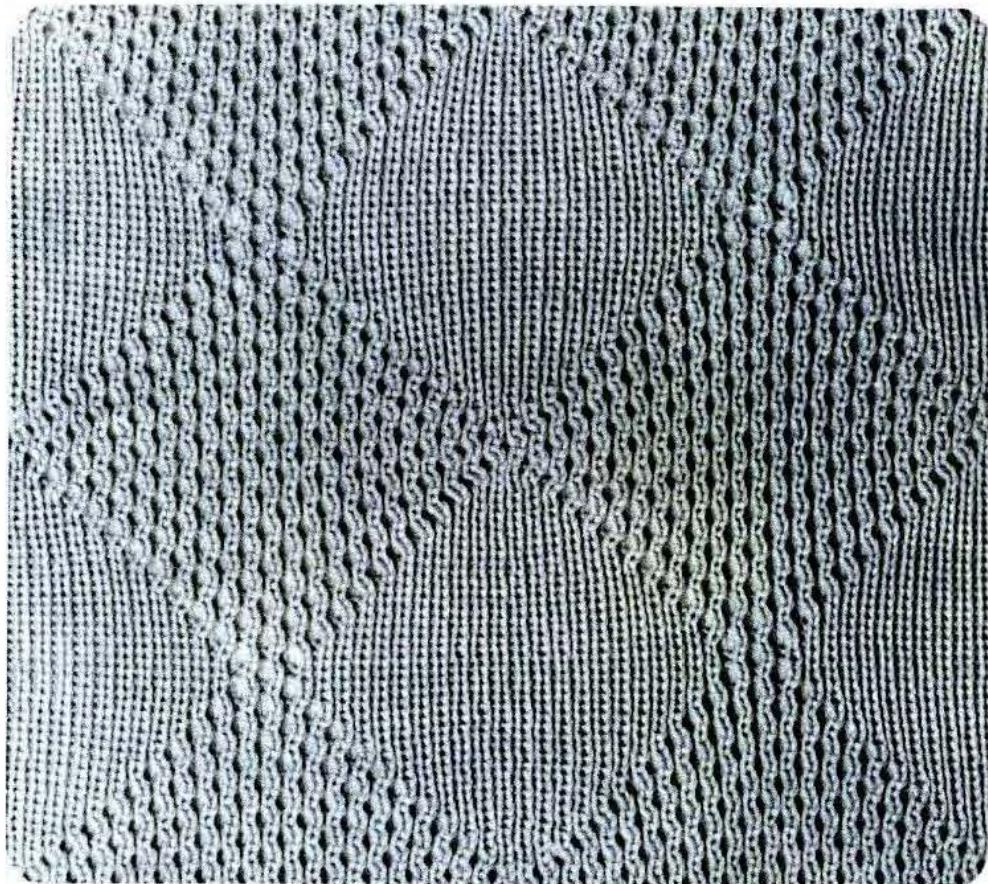
When a large number of needles are used on the KR there is not much elasticity in the garment. Press the swatch according to yarn label before you measure as shown (take gauge).

*It is important to note that not all yarns (especially those with synthetic fibres) are suitable for pressing with or without steam. Always follow instructions given on cone or ball label.

③ Pattern stitches by Punch card

The photo below is a combination of tuck stitches and plain stitches (full needle rib). The more tuck stitches there are, the more your knitting will stretch sideways. So stretch swatch open until the rib stitches can be seen. Also pull lengthways by about 10% and press according to yarn label.

★ As an example, to calculate the sample below, measure 40 stitches over both the tucked and full needle rib areas and take the average as the tension for this pattern.



Notes on measuring the gauge

When measuring tension swatches if you bear the following points in mind, your finished garments will be the correct size.

① Consider the elasticity of the yarn

For fine or low twist yarns, pull swatches slightly in widthways and crossways directions. (Swatches for long garments especially should be pulled lengthwise a little).

Yarn with less elasticity such as Acrylics and highly twisted yarn are measured without stretching.

② Consider the characteristics of the stitch

Pattern stitches with high elasticity need to be stretched both lengthways and crossways before measuring, i.e.

- Punchcard pattern stitches.
- English rib has comparatively more stitches on KR than on KH.
- Ribbed patterns as a whole.
For pattern stitches with comparatively little elasticity measure as usual.
- Racking stitch pattern with fewer stitches on KR.

③ Consider stretch due to weight of the materials

Depending upon yarn used, garments over 500g will tend to drop due to the sheer weight of the yarn. Allow for this by pulling swatch lengthways a little bit when measuring.

Cast on Techniques

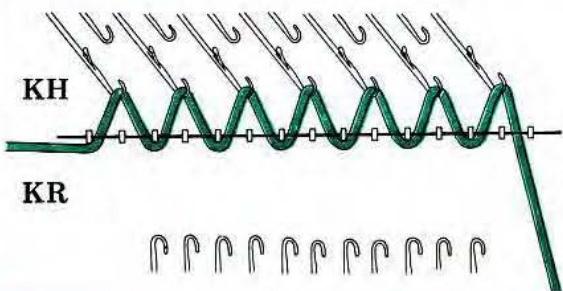
How to work the finished edge cast on with circular knitting

In order to avoid looseness at the start of your knitting, it is important to work the first row tightly. The following three ways are very helpful in achieving a satisfactory finished edge cast on. Choose any one of these bearing in mind where it will be used and your type of yarn.

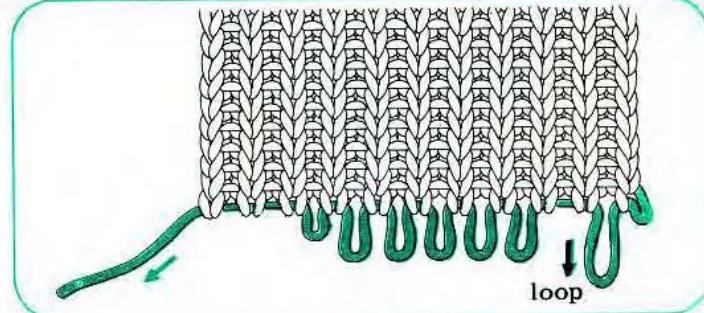
The method using 1 row of waste knitting

This method is generally applied for the needle arrangement for full needle rib and 2 x 2 rib. (The example is for 1 x 1 rib).

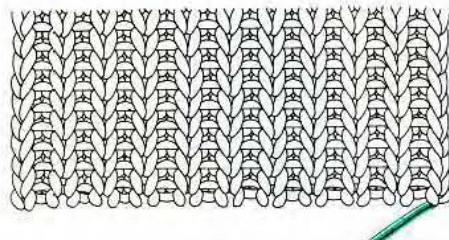
- ① Arrange the needles for 1 x 1 rib and set the tension dial at 0, slide lever at II and knit 1 row.
- ② Hang the cast-on comb as shown and drop off all the loops on the KR. Push back the empty needles to A position.



- ③ Hang the weights.
- ④ Arrange the needles on KR for 1 x 1 rib.
- ⑤ For medium weight yarn, set the tension dial at 0, slide lever at II and knit 1 row, then a round of circular knitting for a finished edge.
- ⑥ Set both beds for knitting.
- ⑦ At completion of knitting, pull the yarn end and the second loop on the opposite side (see diagram) adjusting the loop size until the extra yarn has been pulled flat. Press with steam iron.

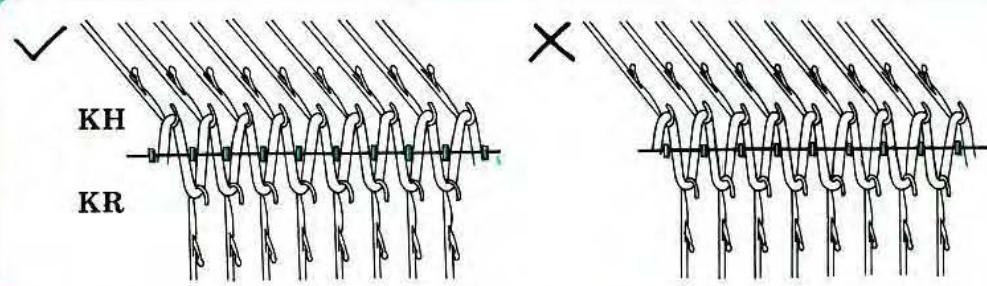


- ⑧ After pressing, pull the loop and remove the thread completely.

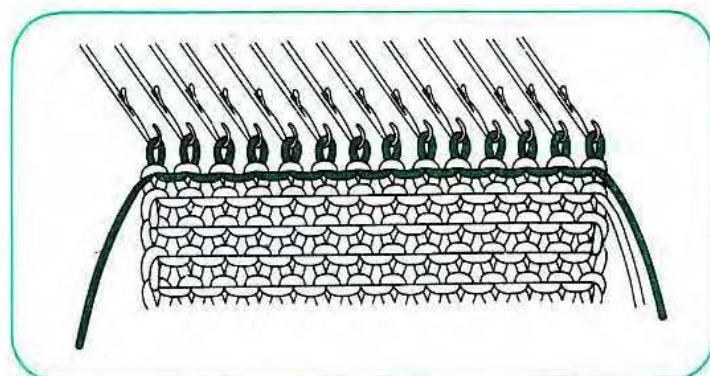


This method is used when you shape the garment by partial knitting at the beginning. (The example is for full needle rib.)

- ① Cast on the stitches for full needle rib and hang the cast-on comb and the weights.
- * In this case be careful that the teeth on the comb are correctly in position as illustrated in the diagram on the left.



- ② Knit 8 - 10 rows. Drop all the stitches off KR. Push back the needles on KR to A position. Knit 1 row on KH only using cast-on thread.

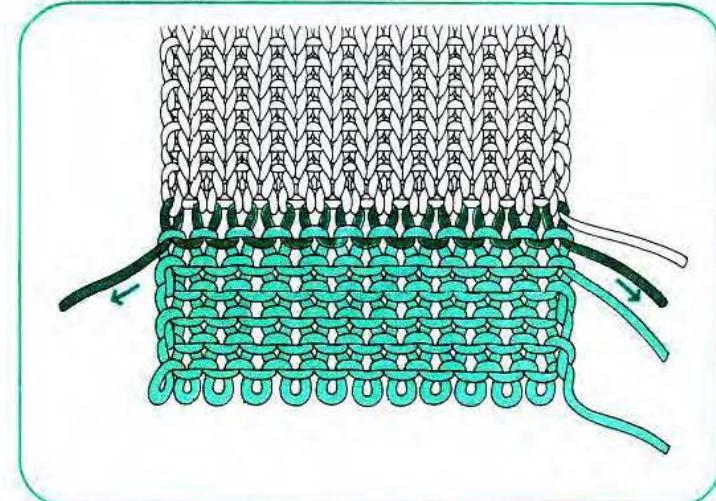


- ③ Arrange the needles on KR for full needle rib.

- ④ For up to medium weight yarn set the tension dial at 0 and Slide lever at II and knit 1 row, then finish the edge by circular knitting.

- ⑤ Re-set both beds for main knitting and continue to knit.

- ⑥ Upon completion your knitting will be as illustrated below. Pull the cast-on thread from left to right to adjust the stitches and press.



- ⑦ After pressing, pull out the cast-on thread.

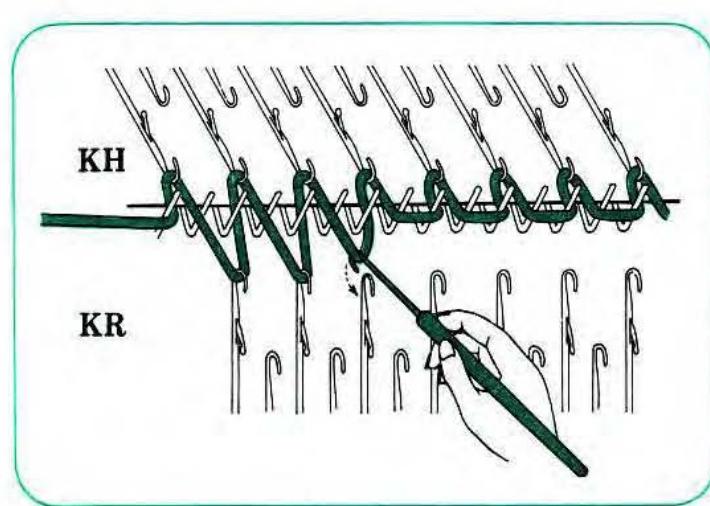


The method using sinker loops hooked onto KR needles

This method is recommended for 1 x 1 rib.

- ① Arrange the needles on KH for 1 x 1 rib and set the tension dial at 0 knit 1 row.

- ② Arrange KR needles for 1 x 1 rib. Then using a work hook take the sinker loops from KH and put them onto the needles on KR. (See illustration below)



- ③ Hang the cast-on comb and the weights

- ④ Set the needles on KH to E position and knit 1 row.

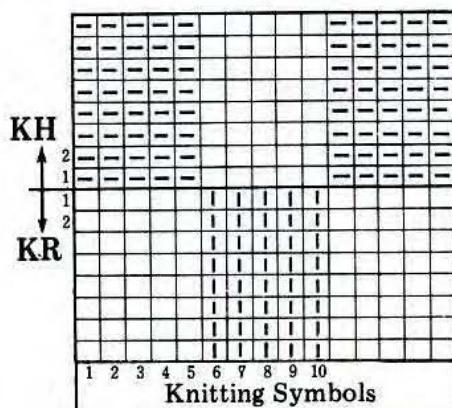
- ⑤ For up to medium weight yarn set the tension dial at 0, Slide lever at II and work the finished edge by circular knitting.

- ⑥ Set both beds for main knitting and continue to knit.

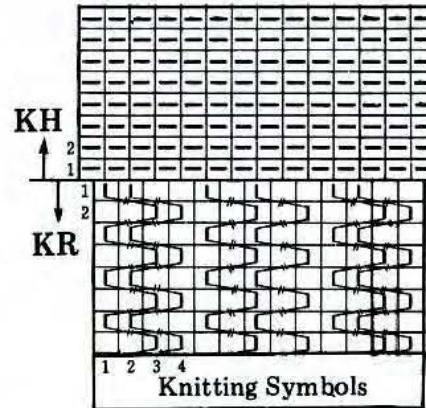
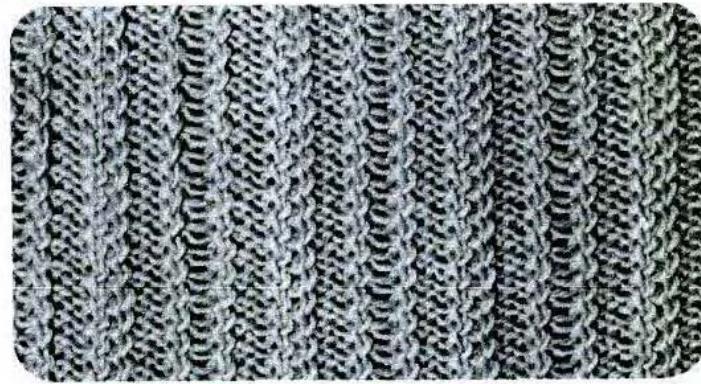
How to re-arrange the needles for pattern stitches

After completion of finished edge cast on, re-arrange needles from full needle rib to pattern

① Fine yarn

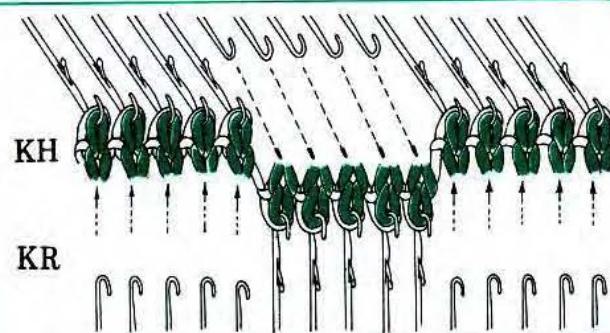


② Very fine yarn



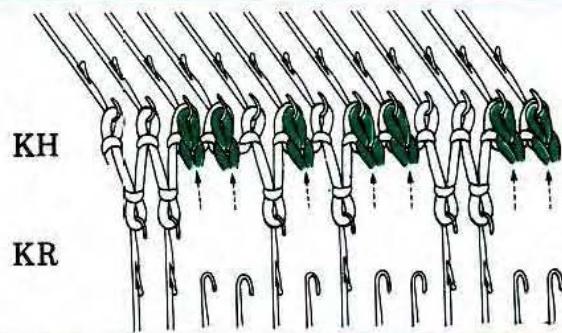
● Setting the stitches for pattern

Adjust the half pitch lever from H to P. Transfer the stitches following the direction of the arrows. Push back the empty needles to A position.



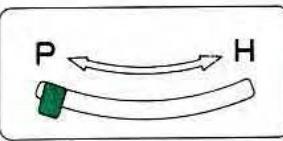
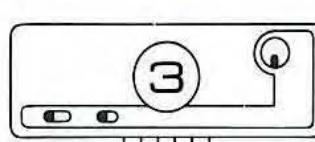
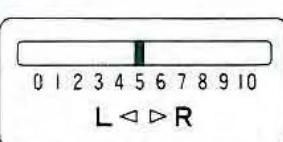
● Setting the stitches for pattern

Transfer the stitches following the direction of the arrows. Push back the empty needles to A position.



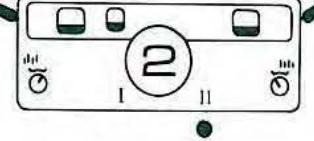
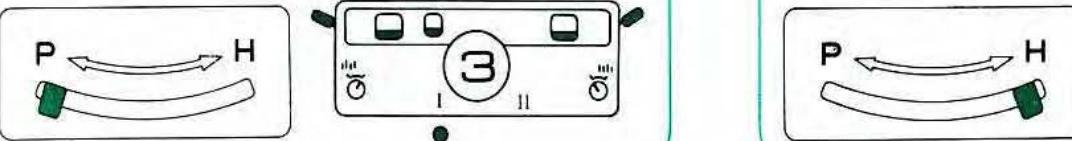
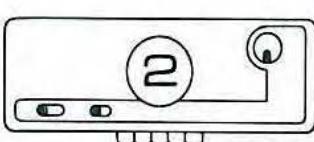
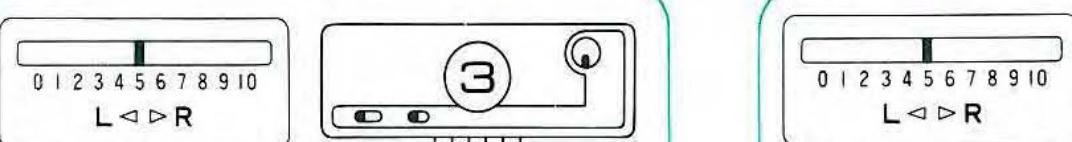
● Setting the machine

Set the machine as shown in the diagram.
You are now ready to pattern.



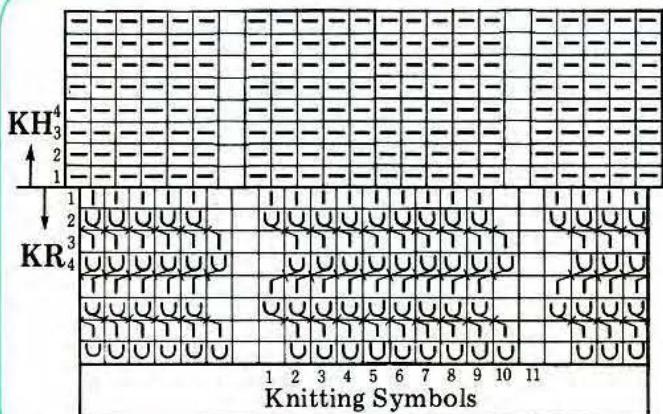
● Setting the machine

Set the machine as shown in the diagram.
You are now ready to pattern.

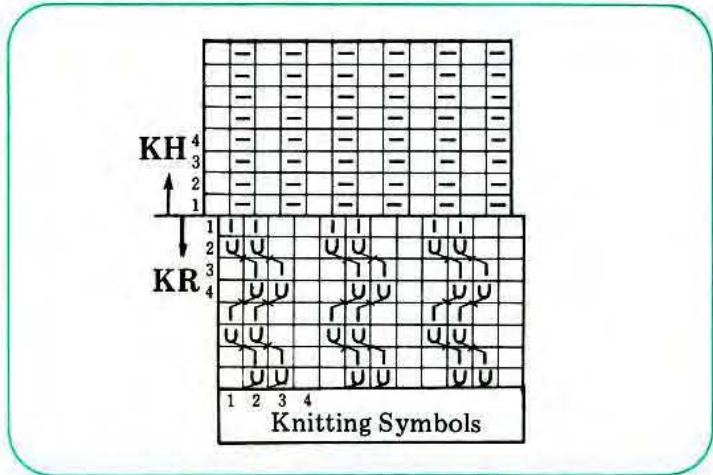


■ After completion of finished edge cast on, re-arrange needles from 1×1 rib to pattern

③ Very fine yarn

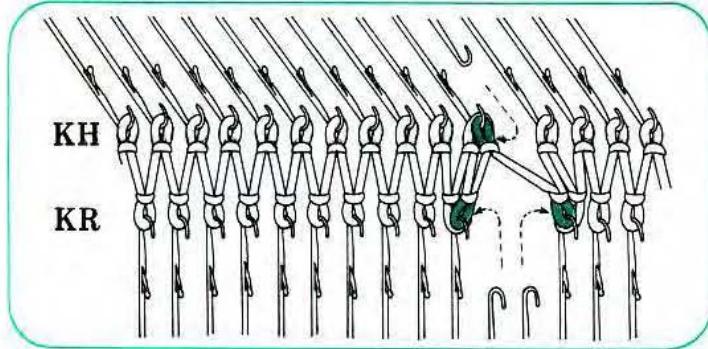


① Medium yarn



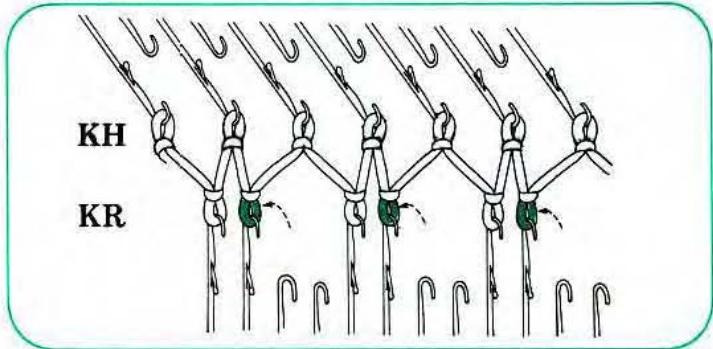
● Setting the stitches for pattern

Transfer the stitches following the direction of the arrows. Push back the empty needles to A position.



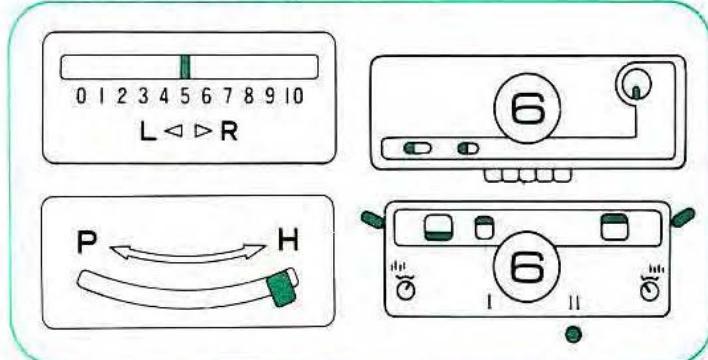
● Setting the stitches for pattern

Adjust the half pitch lever from P to H and transfer the stitches following the direction of the arrows. Push back the empty needles to A position.



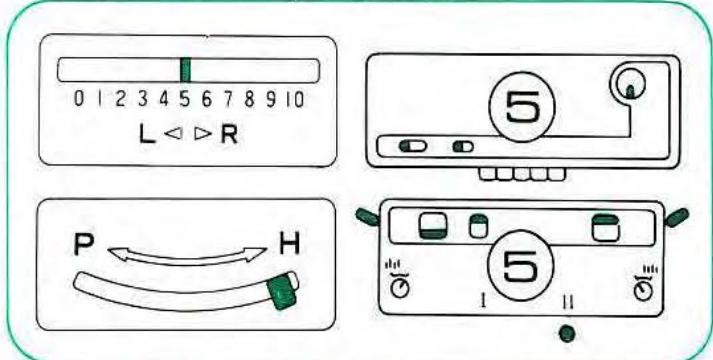
● Setting the machine

Set the machine as shown in diagram below. You are now ready to pattern.

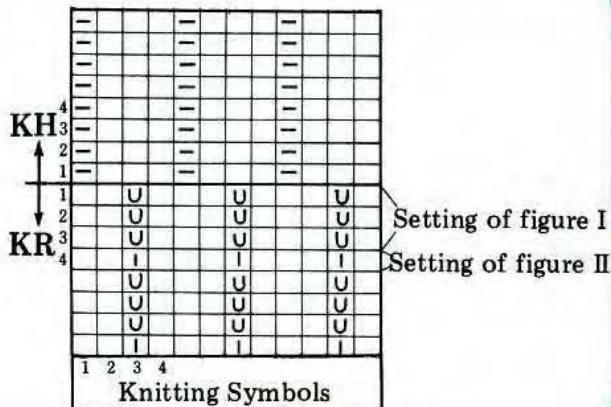
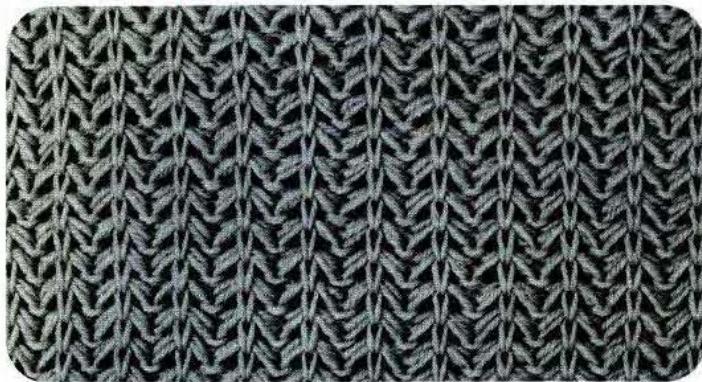


● Setting the machine

Set the machine as shown in diagram below. You are now ready to pattern.

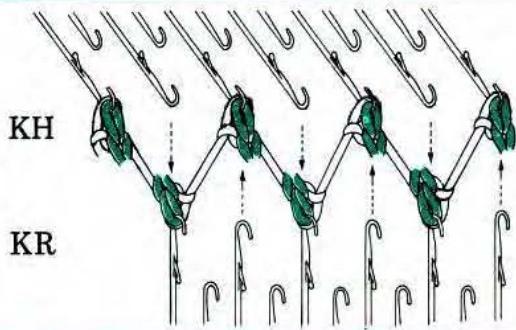


① Medium yarn



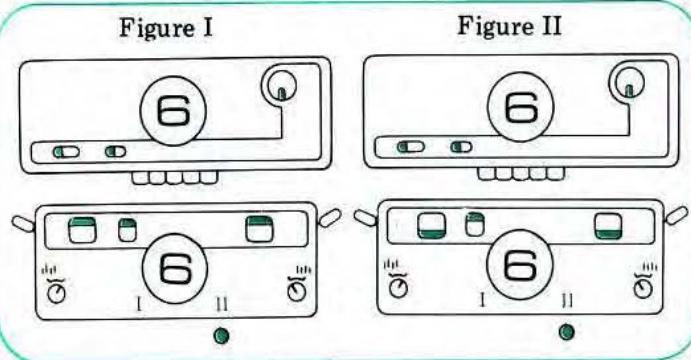
● Setting the stitches for pattern

Transfer the stitches following the direction of the arrows. Push back empty needles to A position.



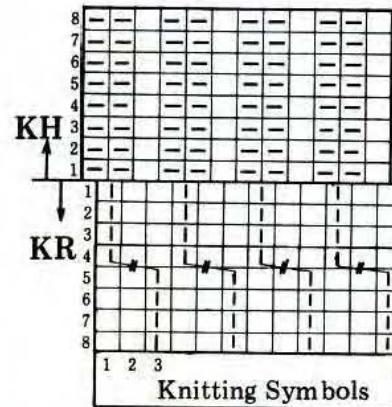
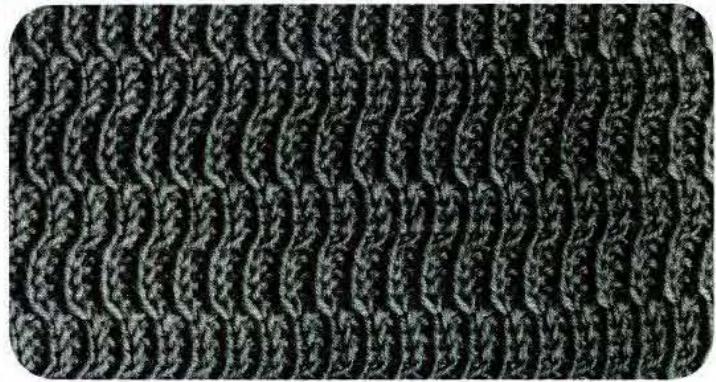
● Setting the machine

Set the machine as shown in the diagram below.
You are now ready to pattern.



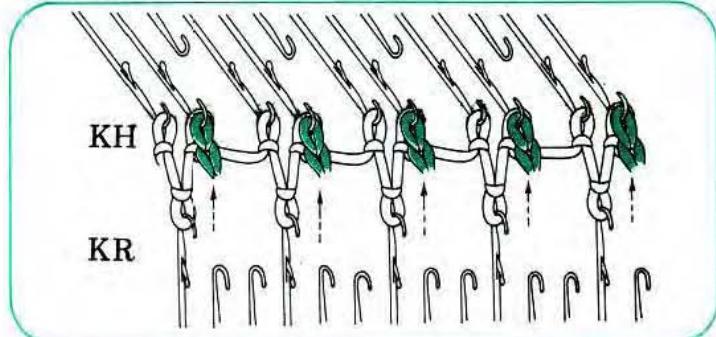
- After completion of finished edge cast on, re-arrange needles from 2×2 rib to pattern

② Medium yarn



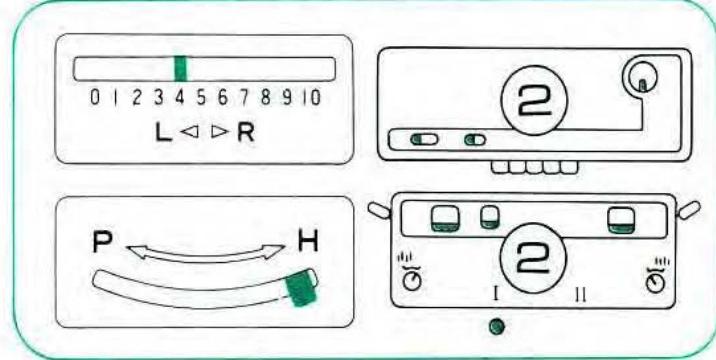
● Setting the stitches for pattern

First turn racking handle 1 pitch, then transfer the stitches following the direction of the arrows. Push back the empty needles to A position.



● Setting the machine

Set the machine as shown in the diagram below.
You are now ready to pattern.



How to finish ribbed edges by hand

Waste knitting

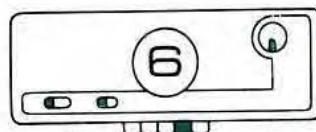
Here are two ways to do waste knitting at the end of ribbing.

Circular waste knitting

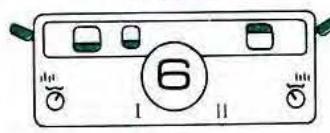
Uses: to finish the ribbing of cuffs, neckbands etc.

Set the carriages for circular knitting and the tension dial 1 full number larger. Knit 8 - 10 rounds in waste yarn and remove from machine. (1 round trip of carriage equals 1 row).

KH



KR



Fold the waste knitting to the outside and you can then easily pick up the stitches and finish them in rib by hand.



U-style waste knitting

Set the carriages as Figure 1 and knit 1 round.

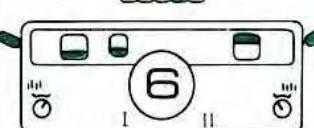
Set the carriages as Figure II and knit 1 round.

Knit 8 - 10 rounds in the same manner. When you knit U-style circular knitting, leave the side with the yarn end open as it will help you to pick up the edge stitch more easily.

Figure I



Figure II



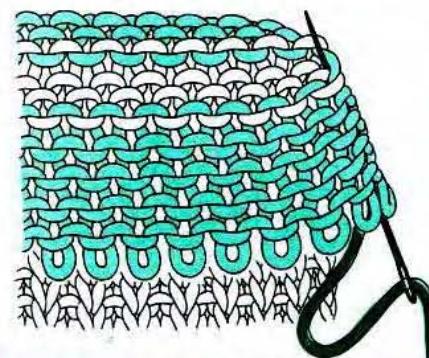
Fold the U-style waste knitting to the outside. It is then easy for you to see the first stitch.



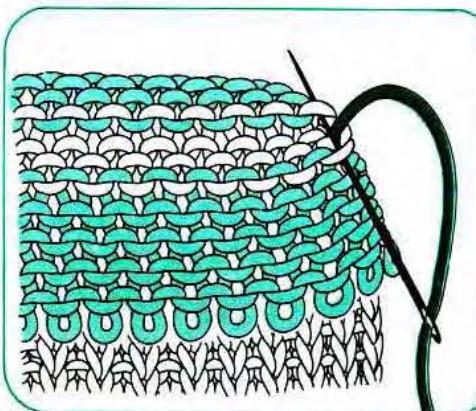
Though the way of finishing off the ribbed stitches is just the same for both single and double bed machines, with the KR the purl stitches and plain stitches are clearly distinguished if they are separated by circular or U-style waste knitting. You can then fold down the waste knitting and finish the edge by hand as shown.

How to finishing 1×1 rib using a tapestry needle

- ① Thread the tapestry needle and insert the needle into the last stitch. Pull through to the right side.



- ② Pull out the needle. Insert the tapestry needle into the same stitch and the first stitch on the back row.



- ③ Pull the tapestry needle through. On the front row, insert the needle into the first stitch from the front and into the second stitch from behind.



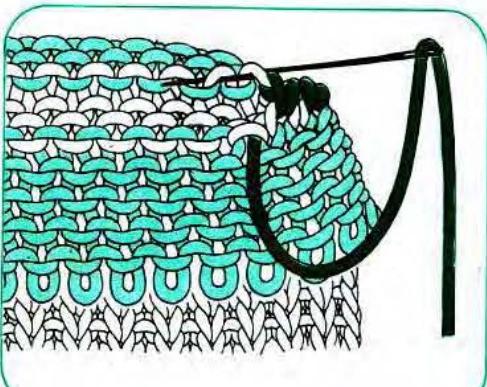
- ④ Pull the tapestry needle through. On the back row insert needle into the first stitch on the front row from behind and into the second stitch from the front.



- ⑤ Pull the tapestry needle through. On the back row insert needle into the 2nd stitch from the front, and into the 3rd stitch from behind.

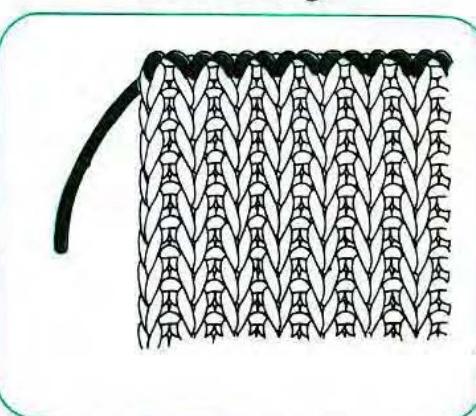


- ⑥ Pull the tapestry needle through. On the back row insert needle into 2nd stitch from behind, and into 3rd stitch from the front.



- ⑦ Repeat above operations up to the left end, and for the last stitches, insert the tapestry needle following the direction of the arrow.

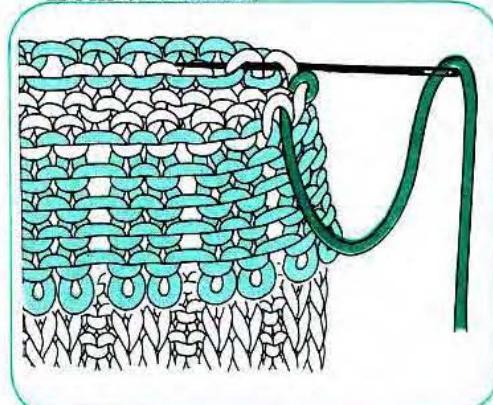
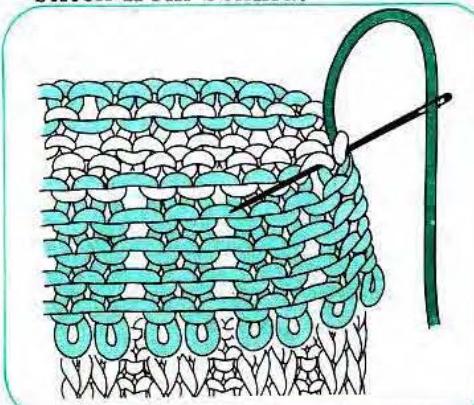
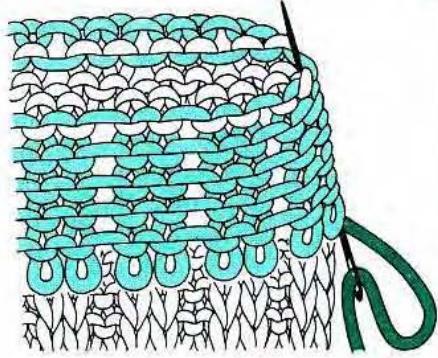
Finished edge



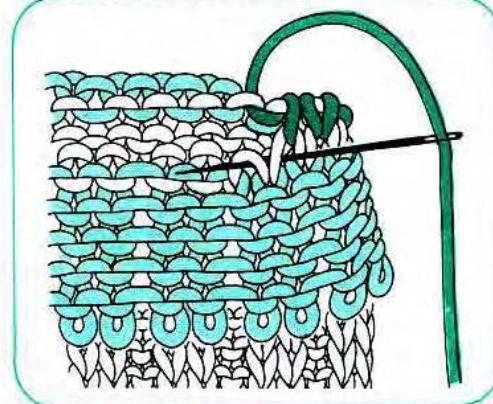
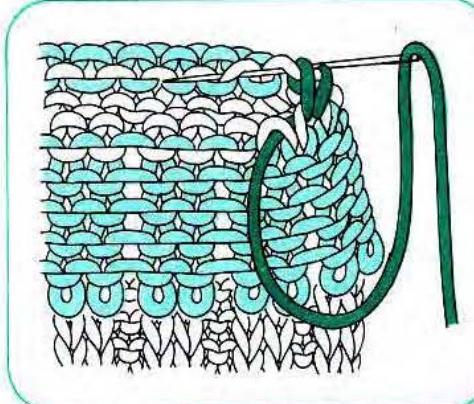
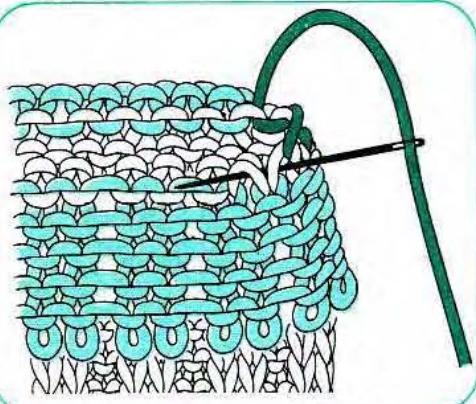
Since the plain stitches are on the front row and the purl stitches are on the back row, the numbers of stitches in the explanation are started from 1 on each side.

■ Finishing 2×2 rib with a tapestry needle

- ① Thread a tapestry needle with the yarn and insert it into the last stitch.
- ② Pull the needle through. Insert the tapestry needle into the same stitch on front row from the front, and to the second stitch from behind.
- ③ Pull the tapestry needle through. Insert the needle into the first stitch on the back row from behind, and into the 2nd stitch from the front.

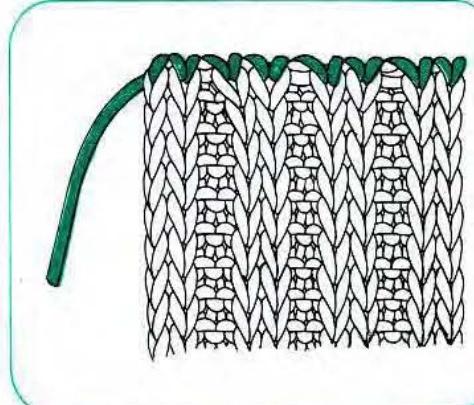


- ④ Pull the needle through. Insert the tapestry needle into the 2nd stitch on the front row from the front and into the 3rd stitch from behind.
- ⑤ Pull the needle through. Insert the needle into the first stitch on the back row from behind, and the 2nd stitch from the front.
- ⑥ Pull the needle through. Insert the tapestry needle into the 3rd stitch on the front row from the front, and into the 4th stitch from behind.



- ⑦ By repeating the above operation finish the stitches until the left end, and for the last stitch insert the tapestry needle following the direction of the arrows and pull through.
- ⑧ Remove the waste knitting and the edge is completed.

Finished edge for ribbing



■ How to finish the ribbed edge of more than a 3×3 rib with a tapestry needle

When you finish the ribbed edge of more than a 3×3 rib with a tapestry needle, first transfer the stitches to 1×1 or 2×2 ribbing before you do the waste knitting. Knit 2 rows, then work waste knitting and finish the stitches as for 1×1 or 2×2 rib.

Techniques for Neat Finishing

7

Sewing and seaming

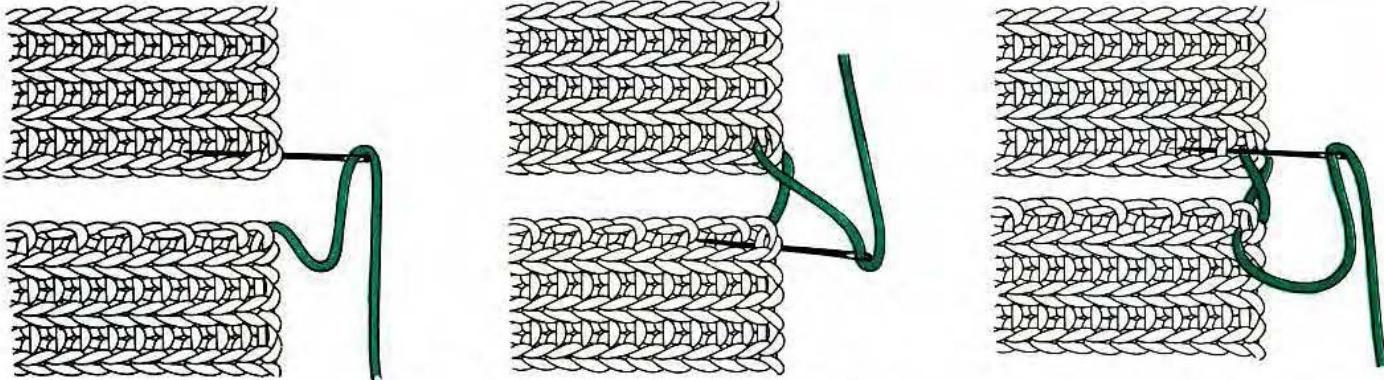
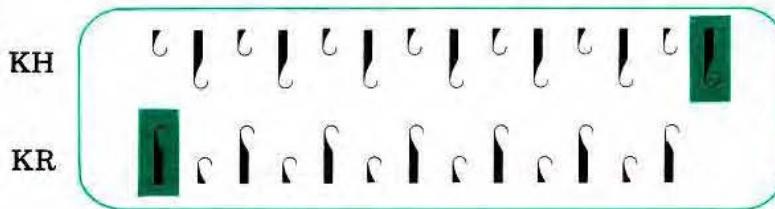
After all your pieces have been knitted and pressed you are ready to join them together. There are many types of seams and if you learn which give a firm finish and which are more elastic, you can use the one most suitable for the garment you are making.

Mattress stitch

(also full needle rib) - (Part 1)

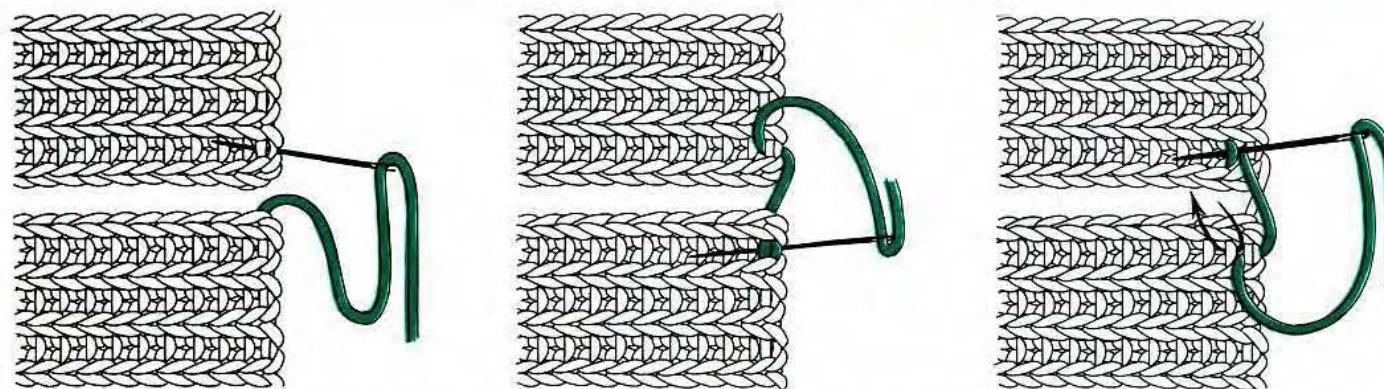
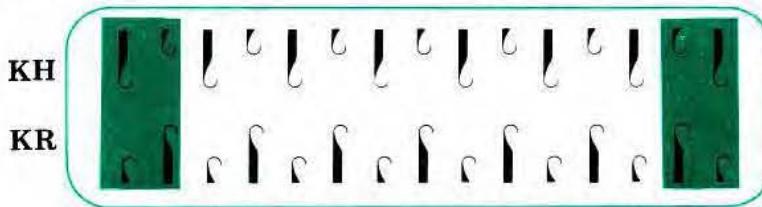
Uses: To seam underarms, sleeves etc.

When the garment is worked in the needle arrangement shown in the diagram below, hold the edges of the pieces with right sides facing you and pick up the cross bar one whole stitch in from the edge. Pull the sewing yarn evenly.



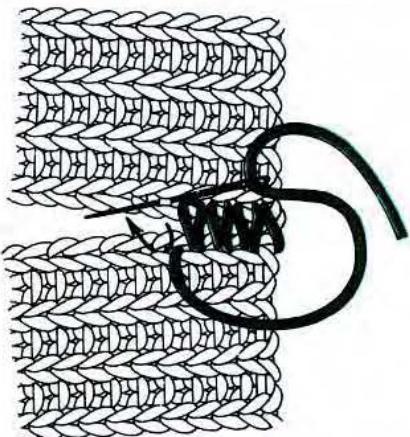
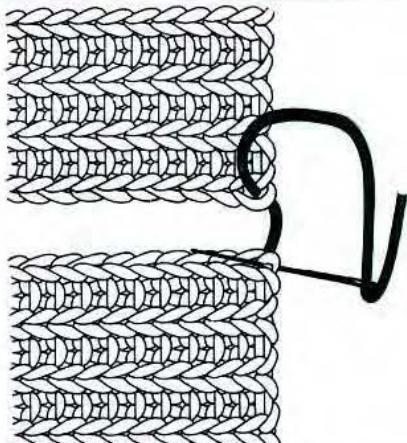
(Part 2)

When the garment is worked in the needle arrangement as under, pick up the cross bar one and a half stitches in from the edge. This method is suitable for fine yarn.



(Part 3)

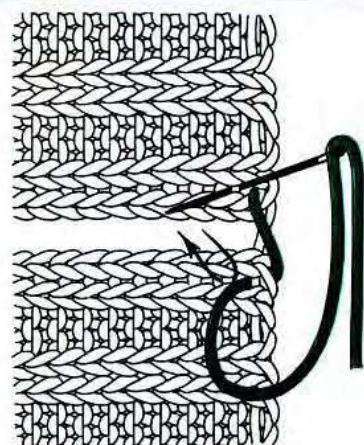
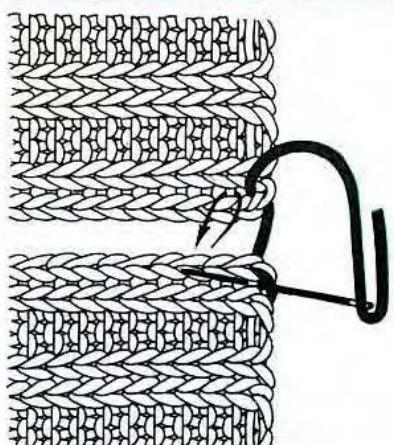
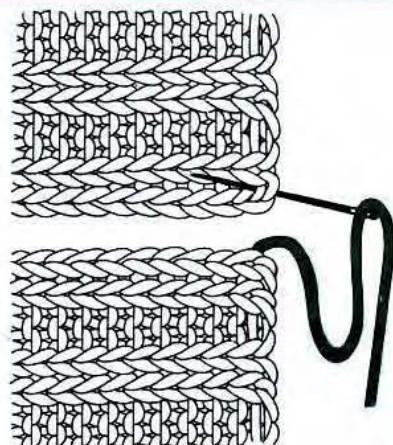
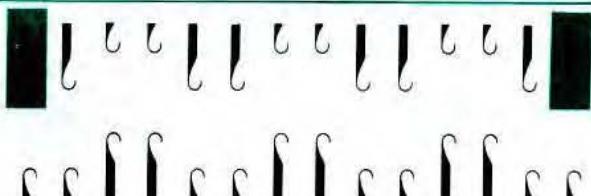
This example is worked over the same needle arrangement as Part 2 and seamed half a stitch in from the edge. The yarn for seaming should be pulled fairly tightly. It makes a slim seam which is recommended for bulky yarn.



2 x 2 rib

Hold both pieces with right sides facing you and pick up the cross bar between the first and second stitch alternately on each side. Pull the yarn fairly tightly so the plain stitches on each side close together.

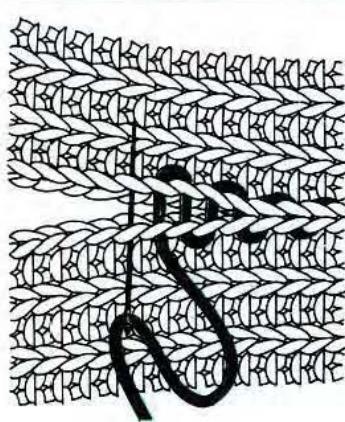
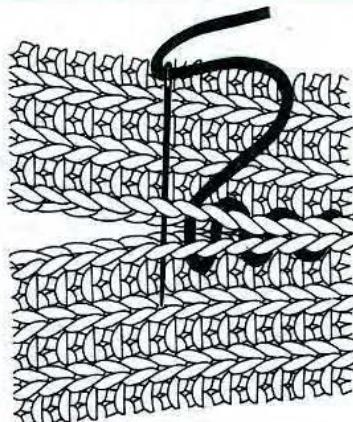
KH



Flat Seam

Uses: For seaming reversible garments.

Hold the two pieces with the right sides facing you and sew either a half or one whole stitch in from the edge, alternately from side to side.



■ How to join stitches and rows

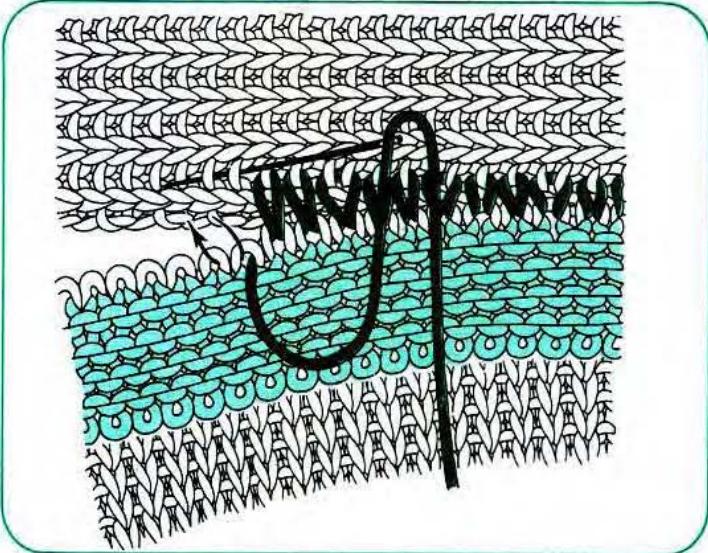
★ For this your knitting should end with either Circular or U-style knitting.

Uses: To attach cardigan bands, yoke or straight sleeves.

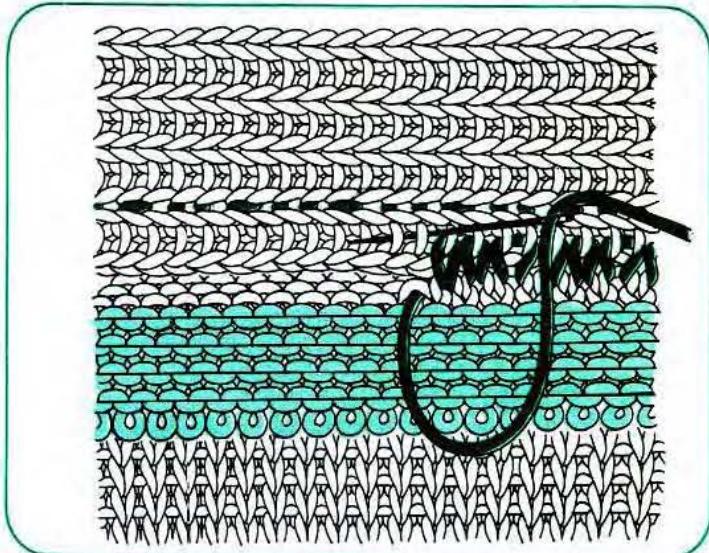


★ When joining stitches and rows, first calculate their ratio to each other.

① Fold back the waste knitting and holding the two pieces with right sides facing you, sew on band. The example uses a ratio of 1 stitch to 1 row twice, and 1 stitch to 2 rows once.



② Next, sew on the wrong side half a stitch in from the edge to the same ratio as on the right side.



● Joining on machine

Part 1

Hold the band with the right side facing you. Pick up the stitches and place onto the KH needles. Put the garment stitches over these, and pull the stitches off over the latches. Cast off the stitches by binding off and remove from machine.

Part 2

Hang both pieces as for Part 1 and knit 1 row at tension one size larger than for garment. Then cast off using slip stitches and a latch tool. (binding off may also be used).

Part 3

Put the garment stitches back onto KH needles with the wrong side facing you. Also re-hang the row ends from the band evenly onto the needles with the wrong side facing you. Knit a facing of about 1 cm in stocking stitch.

Advices for Successful Knitting

Using correct measurements

1 Tension gauge

Before you begin a garment it is essential that you work a tension swatch first. The tension obtained can differ considerably depending upon yarn used (brand, colour), the size of the work, the person knitting it, even from machine to machine, so a fresh swatch must be made each time. For trousers or skirts in 6 or 8 pieces, the nearer the swatch is to the actual size of the garment piece, the more accurate will be the measurement. The following list shows the degree of elasticity for different pattern stitches. From this you will see that a long piece is easy to stretch lengthwise, whilst a wide one stretches in a widthwise direction. The rate of elasticity is different with each pattern, however, the principle is the same whatever pattern or materials are used.

(The chart shows the amounts by which shapes would vary if no adjustment or allowance were made)

2 The chart of elasticity for different pattern stitches (For reference) The numbers in the chart are in %.

		Full needle rib		1x1 rib		2x2 rib		English rib	
		Ratio of sts	Ratio of rows	Ratio of sts	Ratio of rows	Ratio of sts	Ratio of rows	Ratio of sts	Ratio of rows
long	1:10	- 5	+ 30	- 5	+ 20	- 3	+ 25	- 10	+ 25
	1:5	- 4	+ 15	- 4	+ 10	- 3	+ 15	- 7	+ 15
	1:2	- 3	+ 2	- 3	+ 3	- 2	+ 3	- 3	+ 3
square	1:1	± 0	± 0	± 0	± 0	± 0	± 0	± 0	± 0
	2:1	+ 5	- 2	+ 3	- 2	+ 1	- 1	+ 5	- 3
wide	5:1	+ 15	- 3	+ 30	- 3	+ 25	- 1	+ 15	- 4
	10:1	+ 40	- 4	+ 45	- 4	+ 30	- 2	+ 20	- 5

● How to read the chart

- ① The chart represents the variation in amount of elasticity caused by the difference in knitted shapes.
- ② Using a square piece which has the ratio of stitches and rows 1:1 as a base, compare how it changes with the different shapes. However, with ribbed garments as there are so many variable factors, you should treat it purely for reference purposes only.
- ③ Though the material used for this experiment is fine yarn in 100% wool, very fine yarn, medium yarn and summer yarns can also be used without too much difference, and with only a little adjustment.

3 Working an example

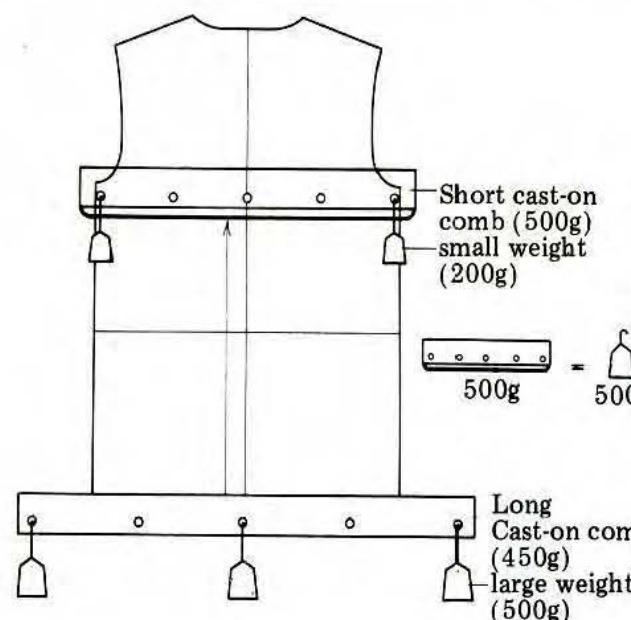
Based upon the chart 2, let's try to apply it on a garment.

● For a cardigan (in full needle rib)

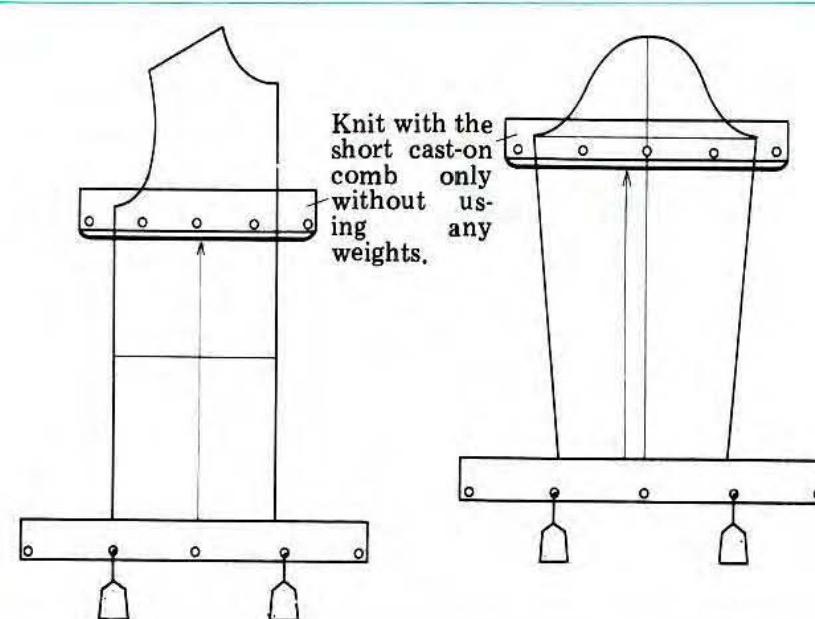
From the chart we see that the ratio of length and width is 2:1 or 1:2 and compared to the basic shape, the difference is very little. Let's try to apply it for a cardigan in full needle rib, using fine yarn. By the underarm decreases the number of stitches above are 1/7 less than underarm width. Therefore it is from here that the garment is considered long in shape, and approximately 1–2% (1–3 rows) stretch must be considered. Although this much stretch is not much over the whole garment, you can prevent it by adjusting the weights.

After the shaping of underarm is completed, remove the cast-on comb and hang the short cast-on comb and a small weight, and continue knitting. The weight of the short cast-on comb and a large weight is equal. By changing the weights approx. 1 kg is reduced. By reducing the weight not only 1–2% of stretch is prevented, but also the stretch caused by the weights. Ratio of length and width of body and sleeves is approximately 2:1.

From the chart you can see that 3% addition for number of stitches and 2% deduction from the number of rows are required. When you work the garments try to knit to the correct size as given in the pattern by adjusting the weights the same as for the back and following the instructions.



After the arm-holes are finished change to the short cast-on comb. The example is worked in full needle rib in fine yarn. For other examples adjust the number of weights. The short cast-on comb and a large weight are equal in weight.



① Changing the Knitleader setting for stitch measure scale and the regulator stitch measure scale (when original gauge is 40 stitches = 10 cm).

$$10 \text{ cm} - (10\text{cm} \times 0.03) = 9.7 \text{ cm}$$

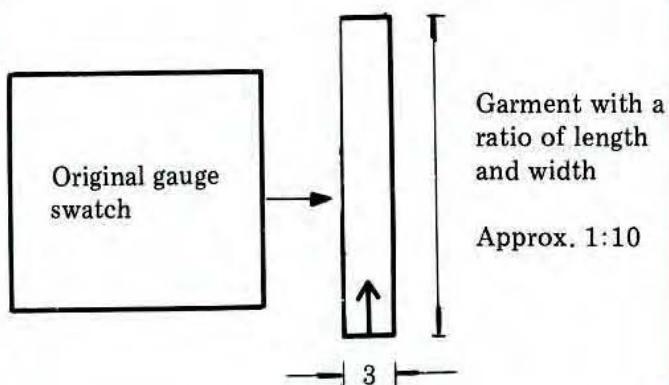
Regulator (when original gauge is 60 rows 11 cm)

$$11 \text{ cm} + (11\text{cm} \times 0.02) = 11.2\text{cm}$$

② As to the number of rows, if you change the gauge as (1) the number of rows for back and front do not agree and you will have trouble in matching the patterns. So it is recommended you adjust the difference by the tension dial. You will be able to adjust 2% by tightening the dial by 1/3rd.

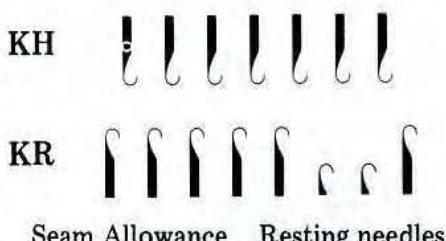
● FOR VERTICAL BORDER (IN FULL NEEDLE RIB)

In this case, the ratio of stitches and rows becomes extremely large. Where the length is very short as for neckband or V-neck, round neck, waistband or cuff ribbing, it is not worth making a swatch each time and you may disregard a small difference. You can determine the elasticity, based upon your basic gauge beforehand, and knit in the following simplified way.



If you look at the chart, for a long piece with 1:10 against the standard square piece, you will easily understand that you will want approximately 5% more stitches and approximately 30% less rows.

- For 5% more stitches you may add the extra stitches for resting needles and seam allowance.



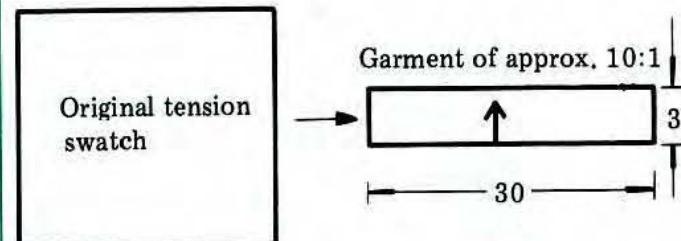
- Number of rows for 30% is adjusted by tension gauge. (When 60 rows = 11 cm). You may knit at $11 + (11 \times 0.3) = 14.3 \text{ cm}$.

● FOR A HORIZONTAL NECKBAND (IN FULL NEEDLE RIB).

If you look at the wide column with 10:1 in the chart you will understand that you are to deduct 40% from the number of stitches and to add 4% to the number of rows.

- For the number of rows, adjust the tension dial. (When 40 stitches = 10 cm) use the Knitleader knitting scale for $10 + (10 \times 0.4) = 14.0 \text{ cm}$.

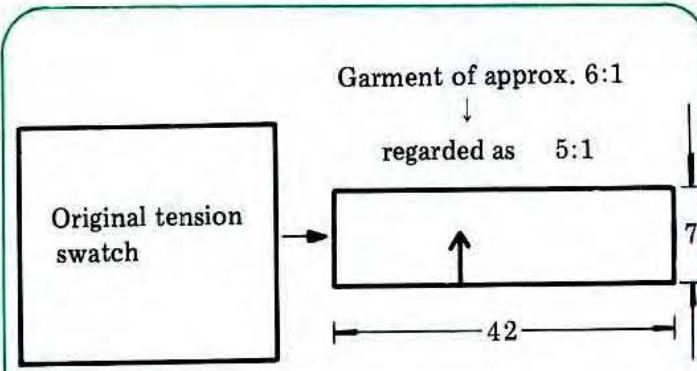
- For number of rows add 1 or 2 rows.



● For waist band ribbing (2 x 2 rib)

If you look at the wide column with 5:1 in the list, you will understand that you are to deduct 25% from the number of stitches and add 1% to the number of rows.

- Adjust the tension dial for the number of stitches. (When 40 sts = 10 cm) use the Knitleader stitch measure scale for $10 + (10 \times 0.25) = 12.5 \text{ cm}$.
- 1% for rows can be disregarded.



The above are simplified versions. Through experience you can expect the correct result. But before you have sufficient experience, it is recommended you make a sample swatch always, as there are individual differences caused by person, machine, materials etc. It's also important you knit lots of garments and get used to your machines. As it is a very good machine and easy to operate, we hope you will make many original garments and have lots of fun.

Collar

Collar is the word used to describe the part which goes around the neck of a garment, not only to keep the body warm, but also for decoration, thus having an important place in designing. The special features of the KR can really be put to good use, and by making adjustments to the tension dial, a neatly-fitting, shaped collar is easy to knit.

In these examples the KH side is used as the right side. Tension dial settings, number of stitches and rows are given for reference only when knitting is medium yarn. Also, because on the KR the edge can be finished neatly with circular knitting, and decreases look better than increases at the edge, the general practice is to knit from the outer edge.

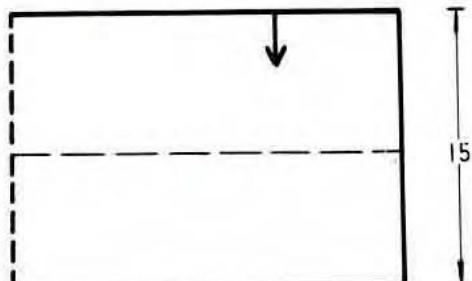
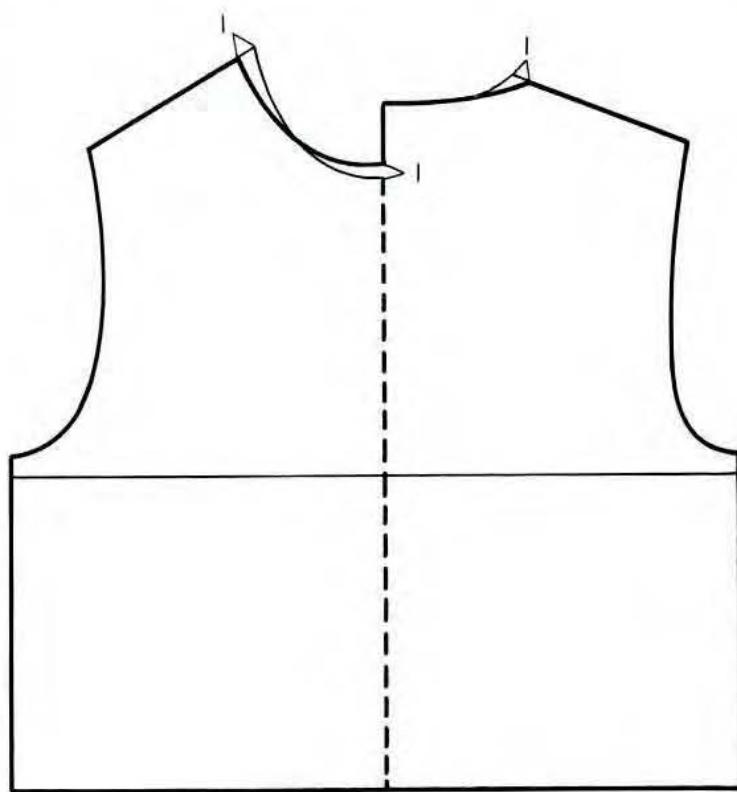
In this chapter we introduce 9 kinds of basic types of collar and how to both design and knit them.

Polo neck



A collar that stands up softly along the neck and turns over is called a polo neck. As it has no neck opening, the original neckline is cut a little wider.

Pattern

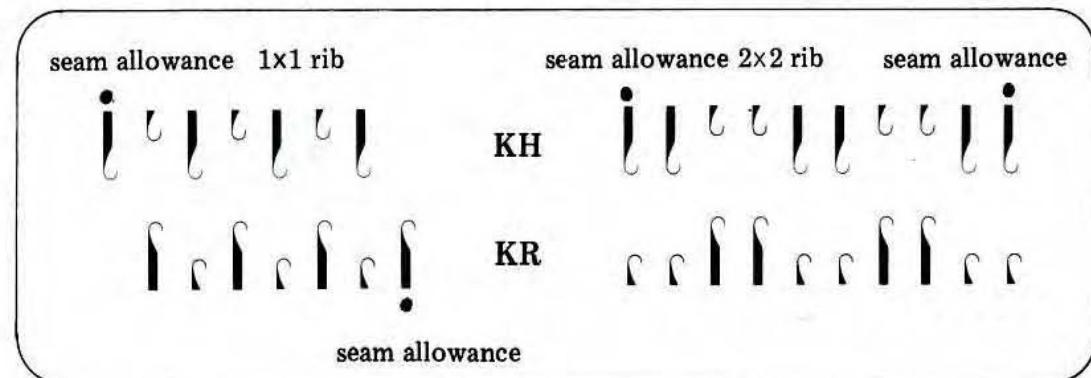


$$\frac{\text{Neck line measurement}}{2} + 15\% = 23$$

★ If desired, the neck shaping can be done by partial knitting. Should you choose to cast off, take care not to make it too tight.

1 How to knit (In 1×1 rib and 2×2 rib)

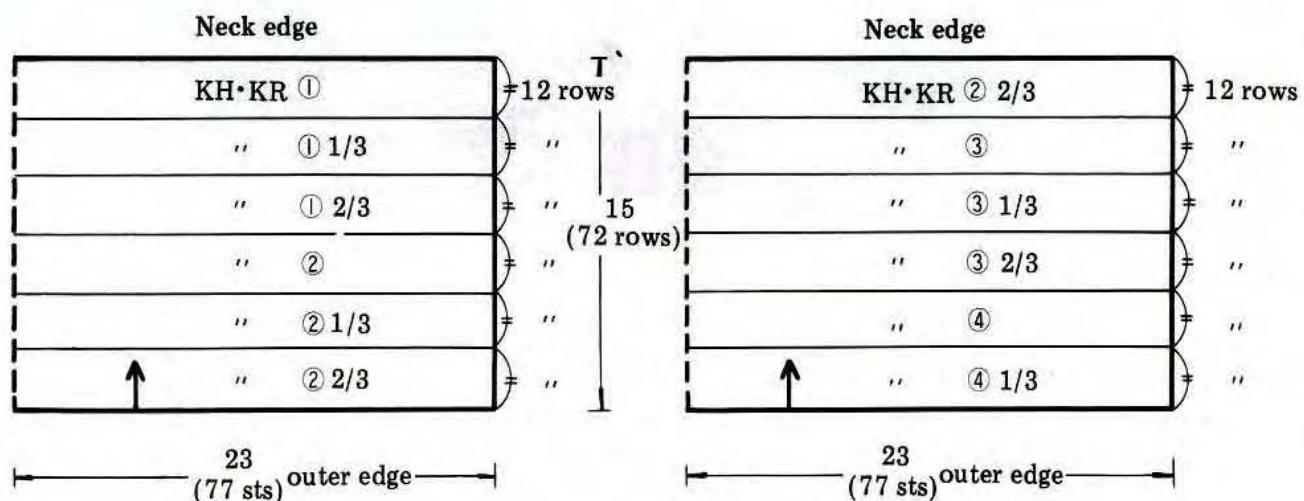
- ① Arrange the needles for your pattern



- ② Make a finished edge cast on with one and a half rounds of circular knitting.

- ③ The collar is worked from the outer edge with slide lever at 1 for 1 × 1 rib and at II for 2 × 2 rib. For tension adjustments refer to the chart. Work the length of the collar.

● Tension adjustment chart



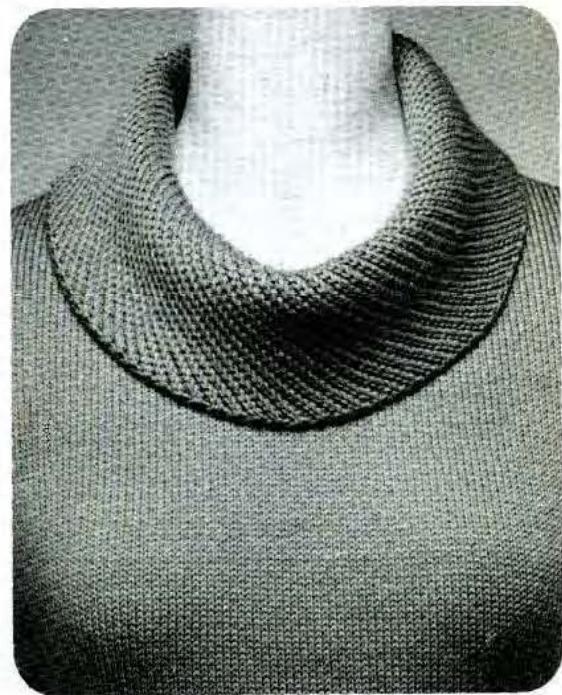
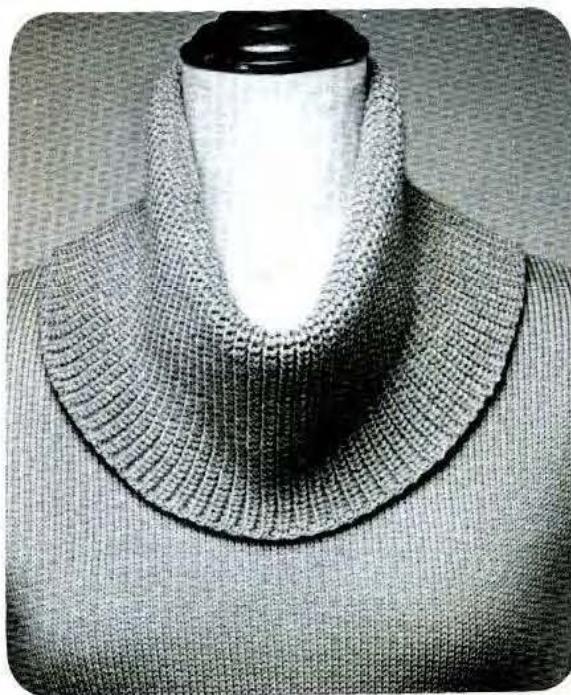
- ④ After knitting is over, transfer the stitches on KR to the empty needles on KH and remove collar from machine using waste knitting.

- ⑤ Press it very lightly with steam iron to even out the stitches.

2 How to attach the collar

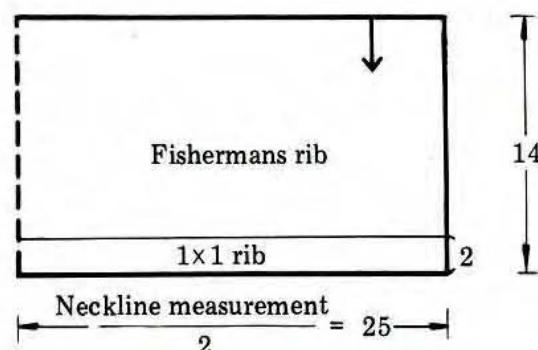
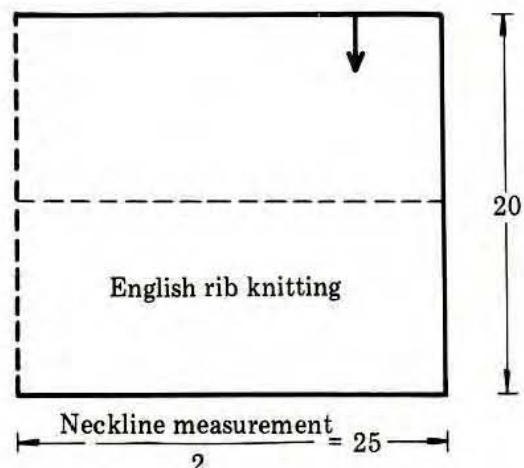
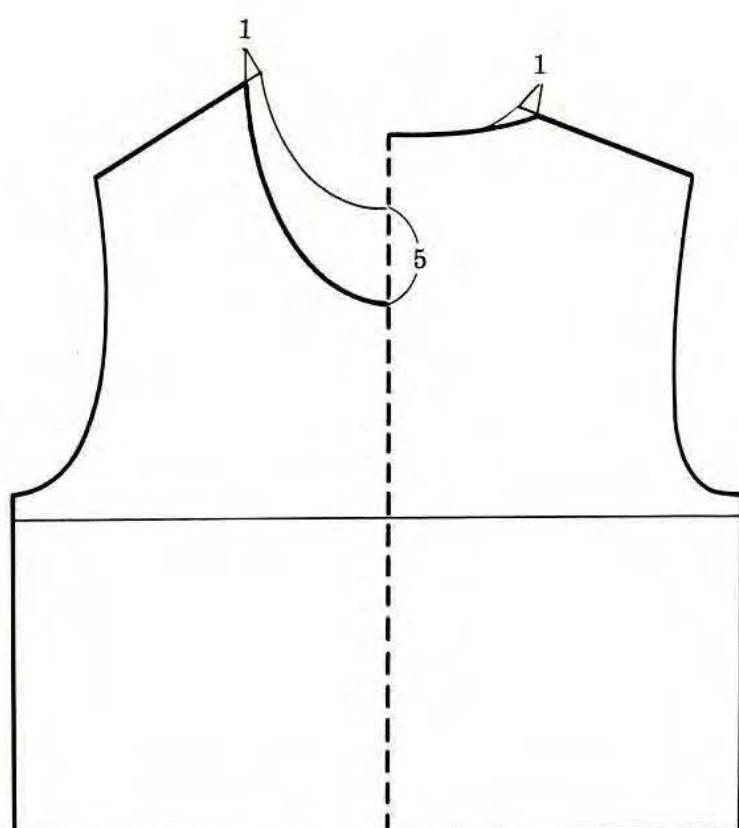
- ① Since the number of stitches for the collar included a 15% allowance, you have to reduce this by 2/3rds (14 stitches) at the front and 1/3rd (7 stitches) at the back. With wrong side facing you, replace collar stitches onto KH putting 2 stitches onto 1 needle as appropriate. Then also with wrong side facing you, replace garment neckline stitches onto same needles. (Take care back and front are on correct needles).
- ② Push out the needles to E position. Set tension dial at 6 and knit 1 row from right to left. Cast off the stitches by wrapping method and remove from machine.
- ③ Close the remaining shoulder and collar seam. Watching out for the right and wrong sides when sewing the collar seam, work 2 or 3 cms above the neck edge in a reversed seam.

Turtle neck



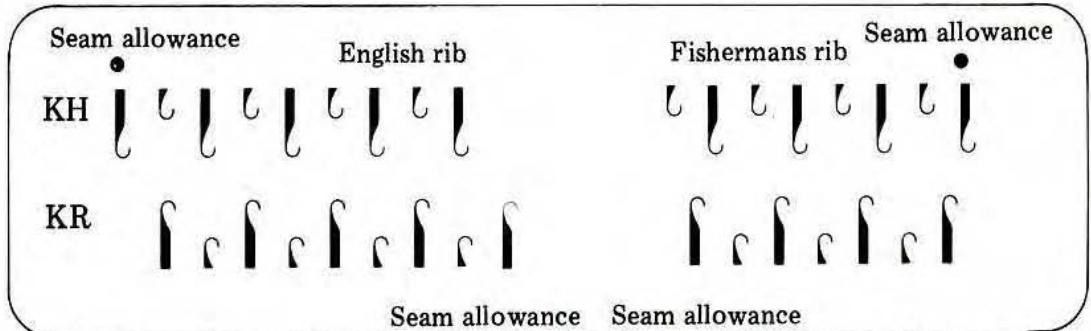
As this type of collar is a generous fit, English rib or fishermans rib is recommended.

Pattern



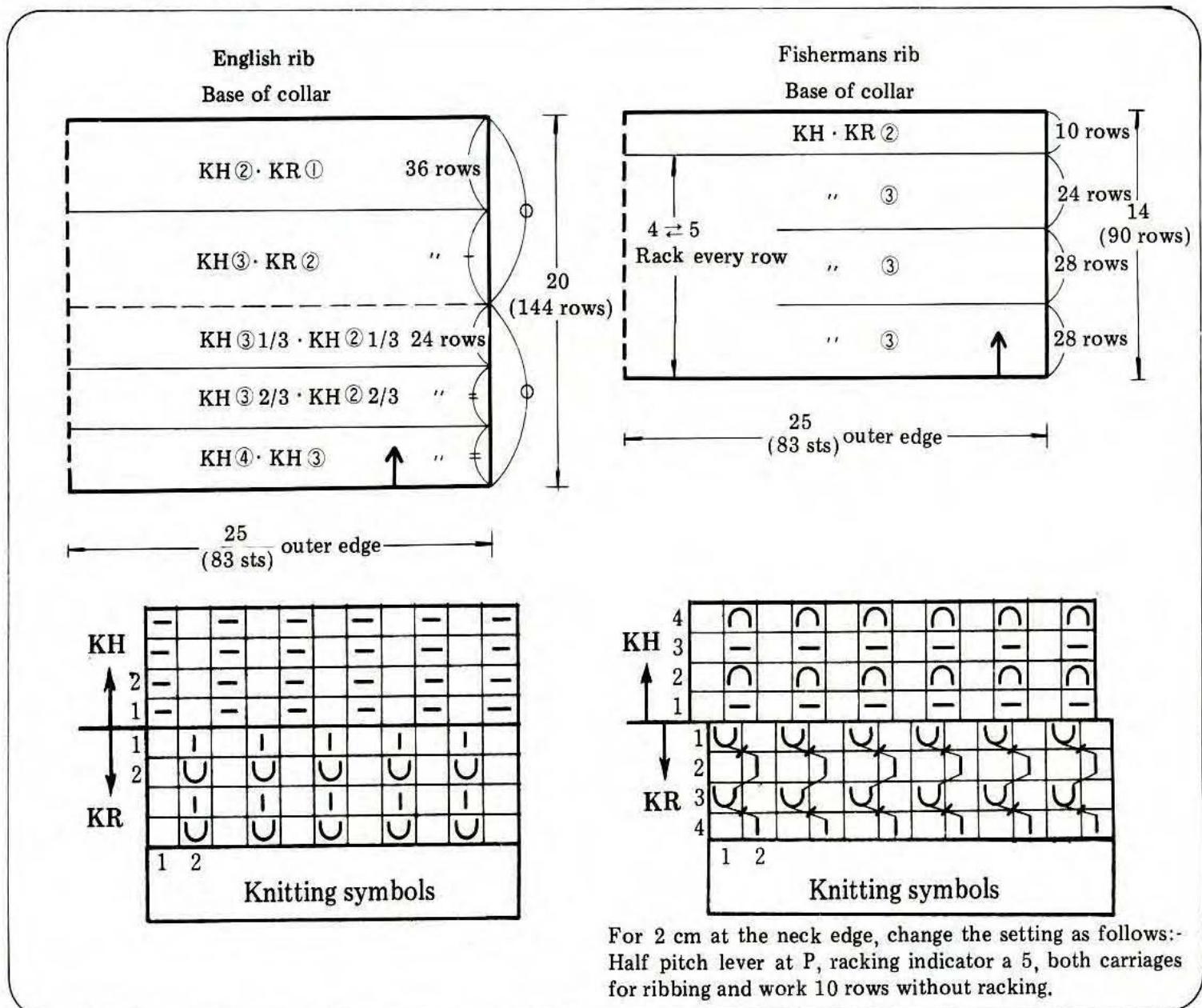
1 How to knit

- ① Arrange the needles for your pattern.



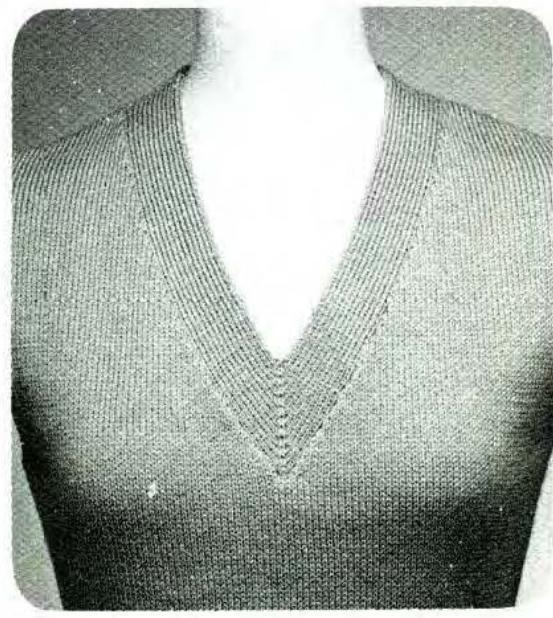
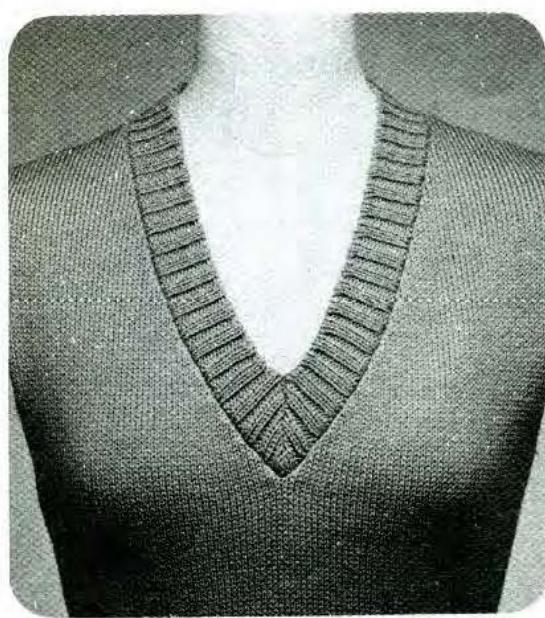
- ② Since the pattern is English rib or Fishermans rib, begin with 1 round of circular knitting for the finished edge. Set the Slide lever at 1 and knit the length of the collar adjusting the tension dial by referring to the tension adjustment chart.

Tension adjustment chart

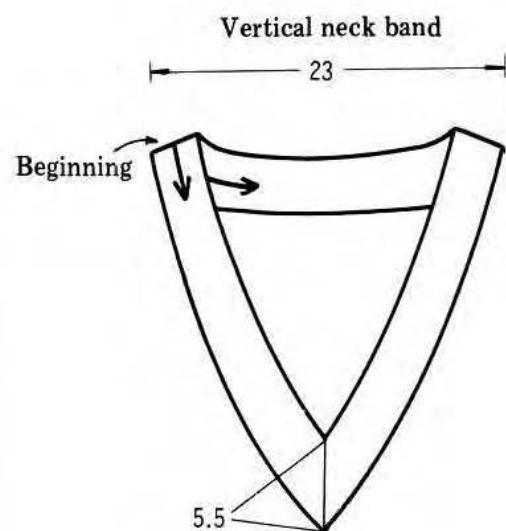
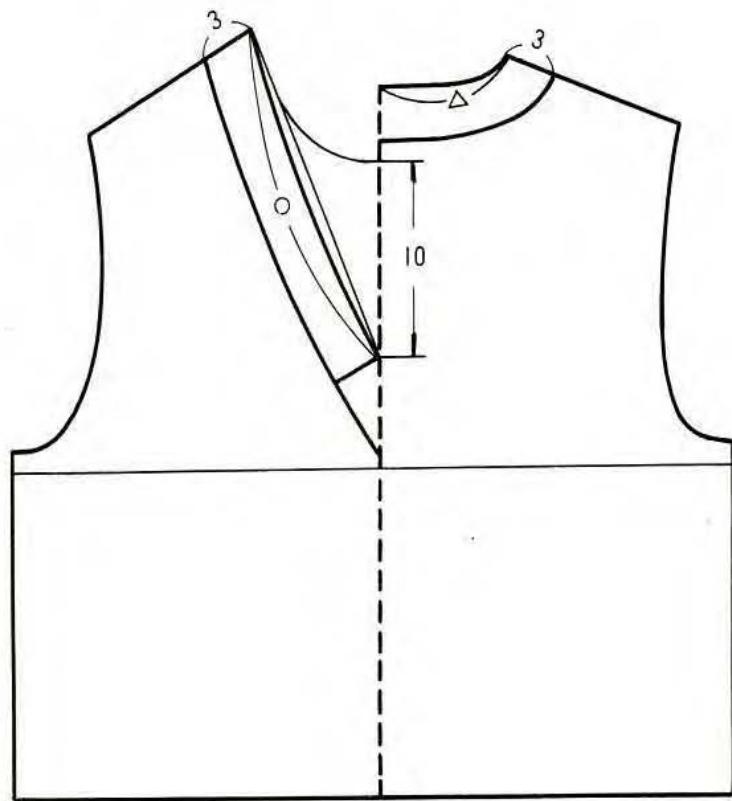
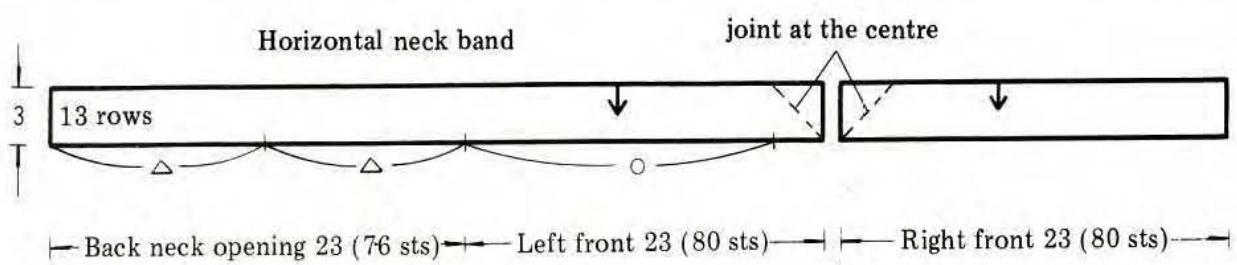


2 How to attach the collar

- ① Transfer the stitches on KR to empty needles on KH. Join shoulder seam. Pick up the stitches from the neck edge and replace them onto the needles with the wrong side facing you.
- ② Push out the needles to E position. Reset the tension dial at 10 and knit 1 row. Cast off the stitches with a latch tool. (As the neck opening is large, you will have no trouble pulling it over your head even if you cast off with slip stitches).
- ③ Join the remaining shoulder and collar seam, sewing 2 – 3 cms from the neck edge in reverse.

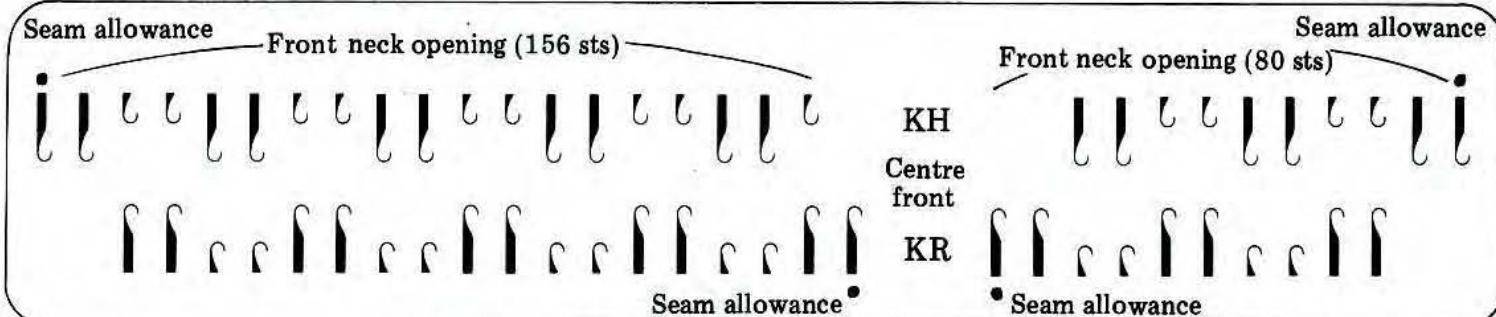


Pattern



1 How to work a horizontal neckband (2×2 rib)

Arrange the needles for the pattern. (Worked in two pieces)



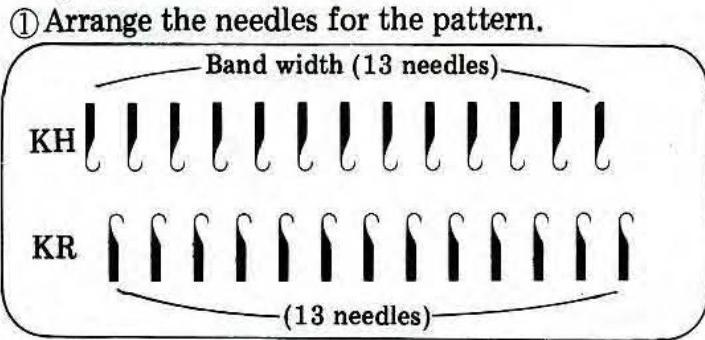
- ① Make a finished edge cast on with one and a half rounds of circular knitting.
- ② Set tension dial at 2-2/3, slide lever at I and knit 13 rows for the length of the neck band. Transfer the stitches on KR to KH. Work waste knitting and remove the neck band from machine.

1 How to attach the neck band

- ① Replace neckband stitches with right side facing you. Then replace stitches from the neck opening with the wrong side facing you.
- ② Push out the needles to E position and knit 1 row. Set the tension dial at 10 and knit 1 row. Cast off with slip stitches using a latch tool
- ③ Sew the center of front with half back stitches or on sewing machine. Then open seam and finish.

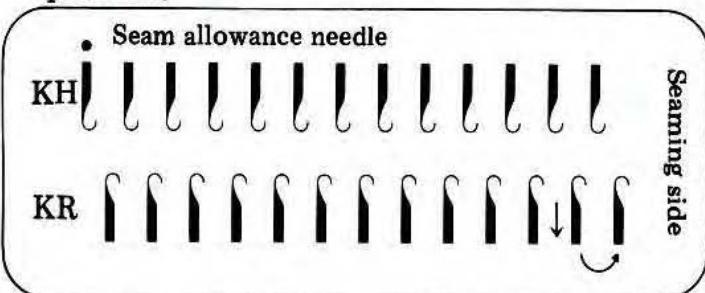
2 How to work a vertical neckband (Full needle rib).

- ① Arrange the needles for the pattern.

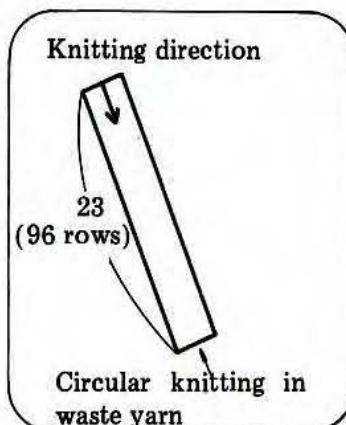


- ② Adjust the tension dial to 6, and the slide lever to 1 and work 10 rows of circular knitting using waste yarn.

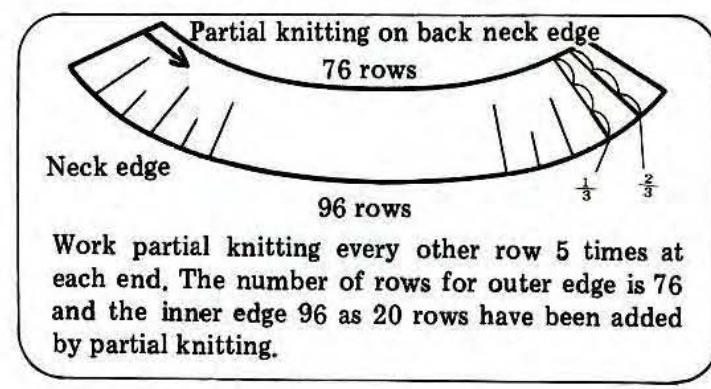
- ③ Change to main yarn and work 1 round. Transfer the stitch following the direction of the arrow and push back the empty needle to A position.



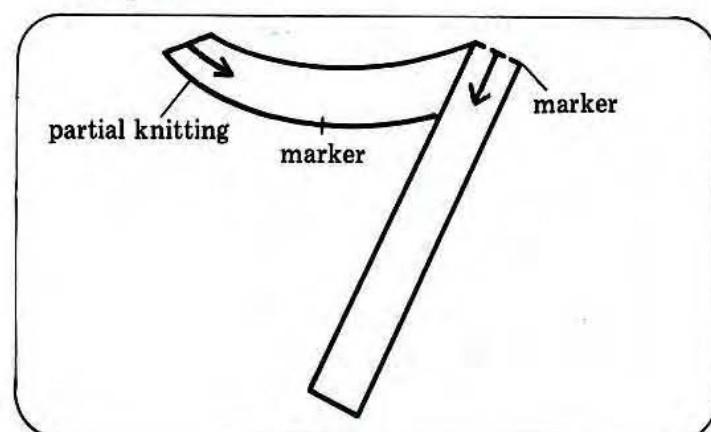
- ④ Adjust the tension dial to 2 and work 96 rows for the right side of front neck opening. Change to waste yarn and work a few rows of waste knitting. Remove from the machine.



- ⑤ Fold back the waste knitting and pick up the stitches of the circular knitting on the first row on both pieces.
- ⑥ To shape back neck work partial knitting at the neck edge.

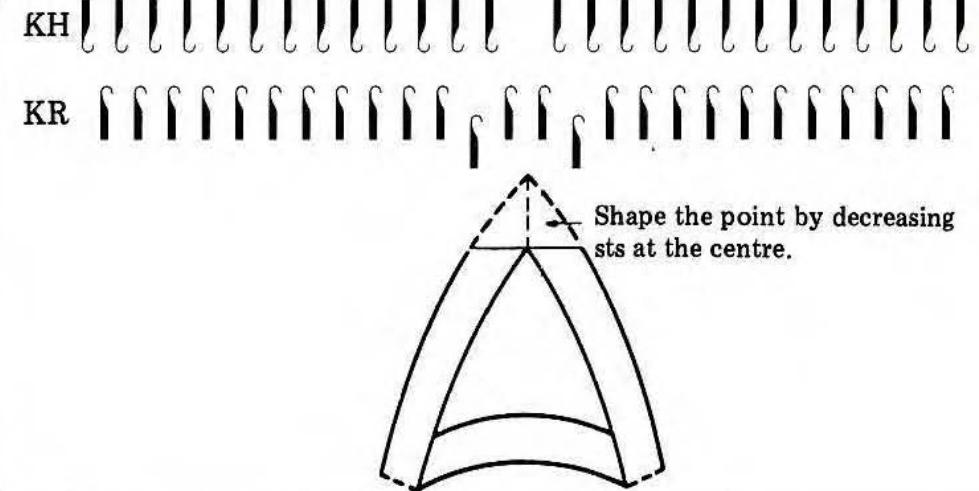


- ⑦ Put the marker for the centre back and at the neck point.

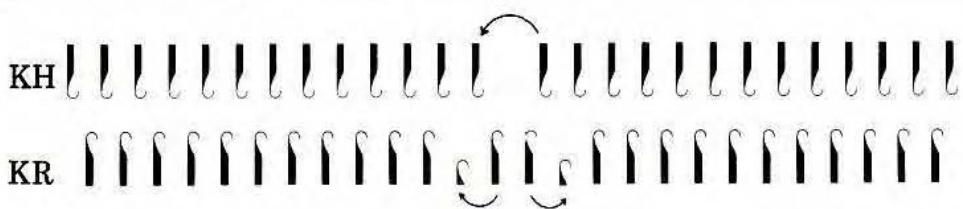


● Decreases for the V-point

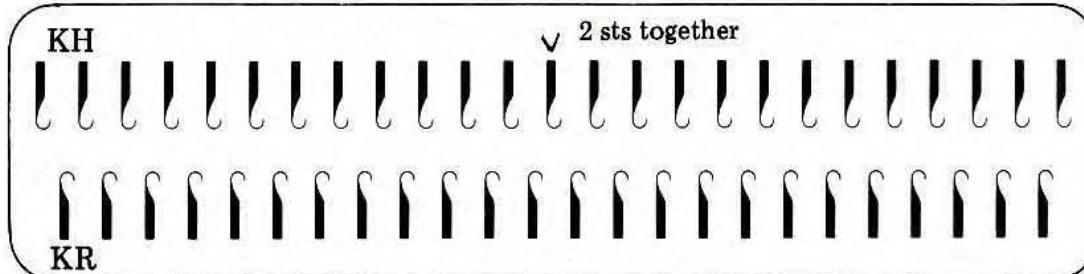
Rows for V-point 25 rows $\div (11 + 1) =$ 2 rows straight.
Dec. 1 stitch every 2nd row
10 times
Dec. 1 stitch every 3rd row once.
↑
Number of sts. to be decreased



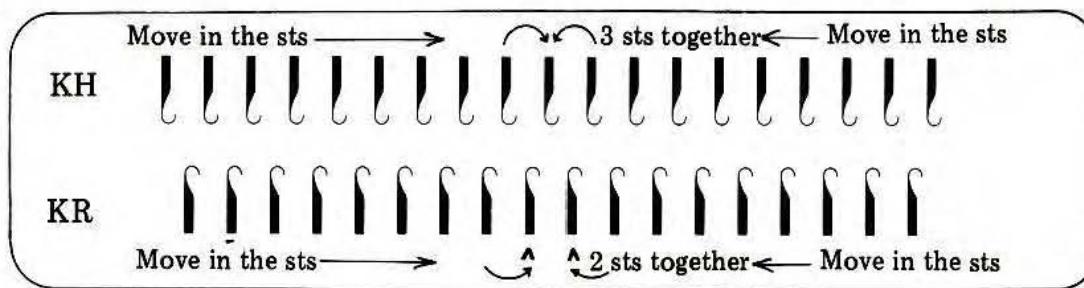
- ① Rehang the two sets of stitches from the neckbands as shown in diagram on right.



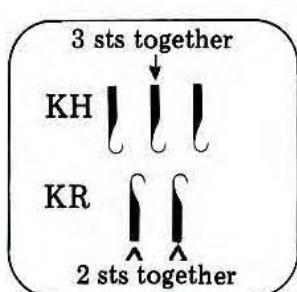
- ② They should now look like this.



- ③ Knit 3 rows and work decrease as illustrated in the diagram.

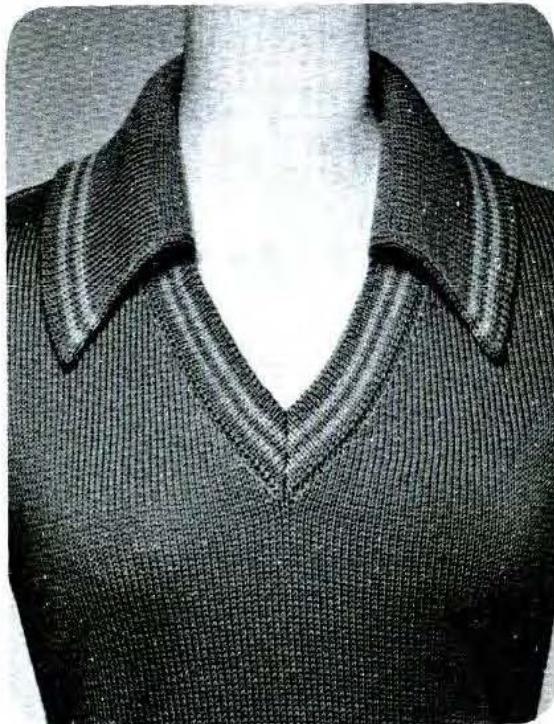


- ④ Continue knitting and decreasing.
- ⑤ Continue knitting and decreasing until the stitches remain as illustrated and 23 rows have been worked. Transfer 4 stitches onto the middle needle. Pull through the stitches and remove from machine.



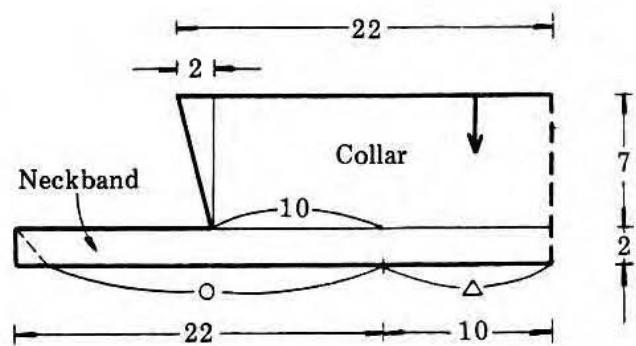
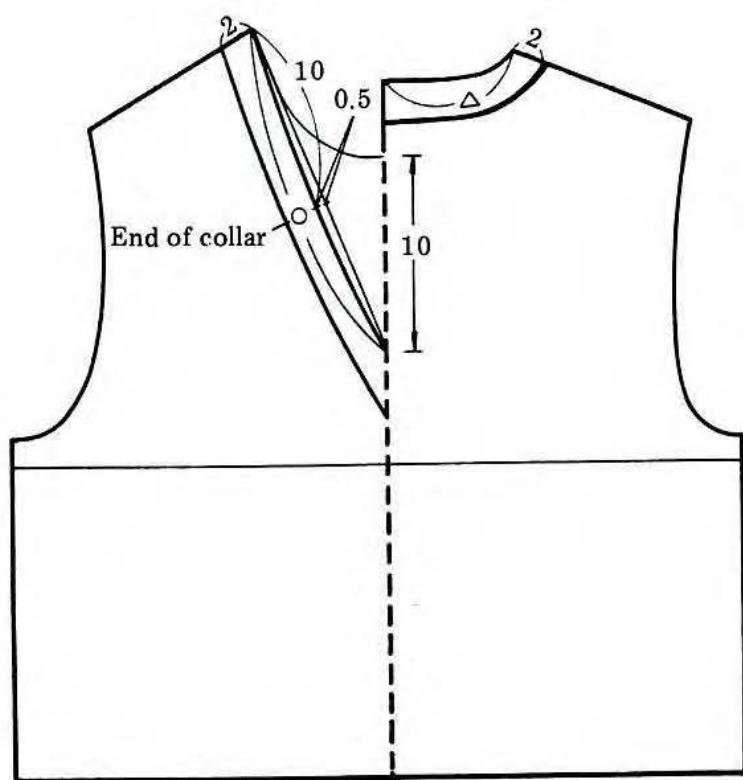
2 How to attach neckband

Press very lightly with a steam iron. Undo waste knitting and finish stitches in ribbing. Match markers on garment body and neckband, pin band in place and sew it with blind stitch.



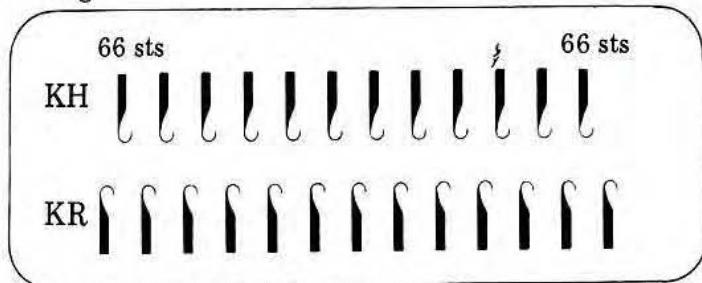
Pattern

1/5

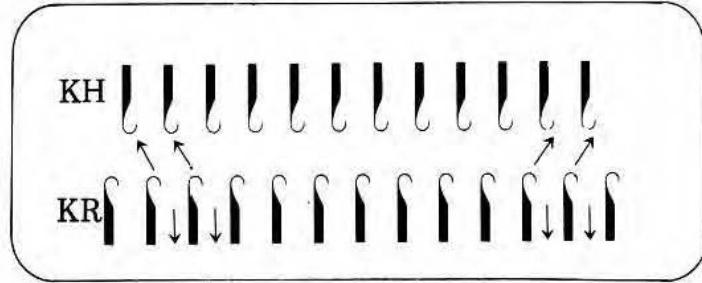


1 How to knit (Full needle rib)

- ① Arrange the needles for the pattern, cast on and knit one and a half rounds of circular knitting.

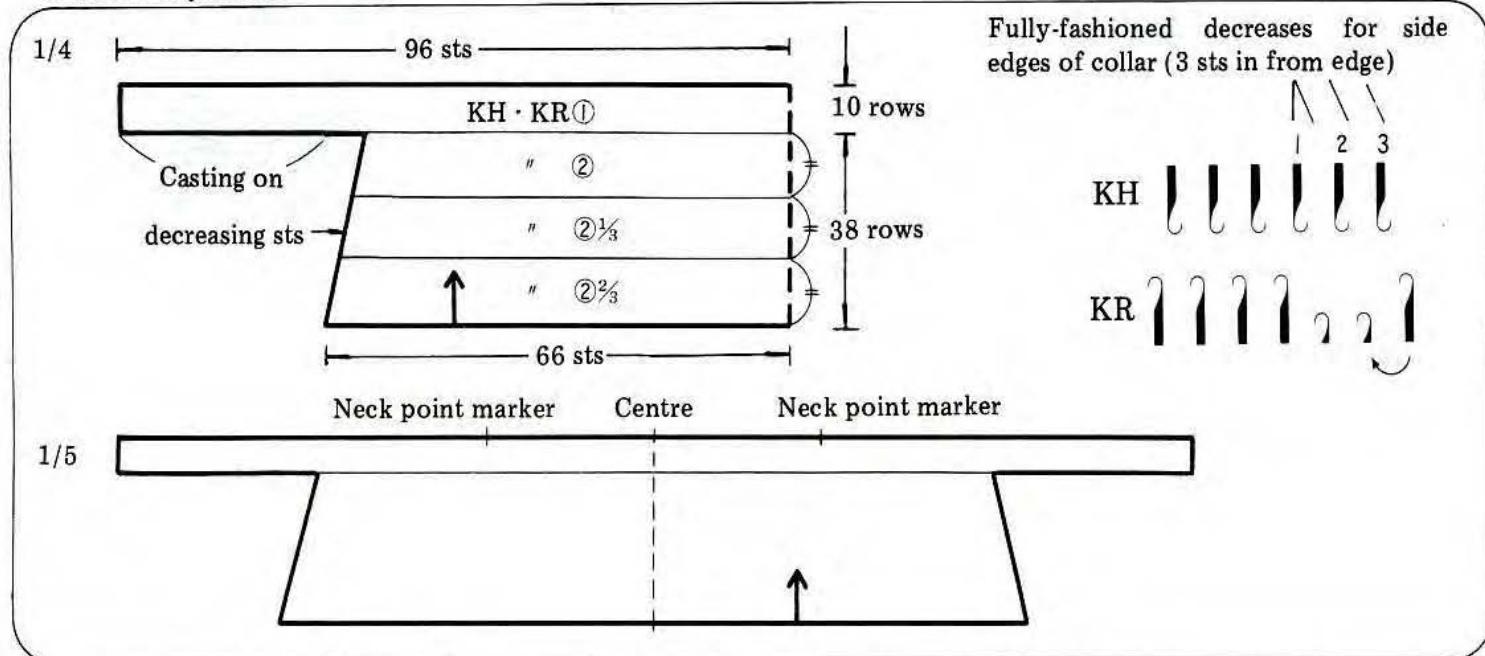


- ② Transfer the stitches on each side of KR following the direction of the arrows.



- ③ Set the slide lever at 1 and knit the collar length shaping both sides by decreases and tension adjustment. Break yarn.

Tension adjustment chart



- ④ After you have worked the upper collar, at each end, bring forward 35 needles (for 12 cm neckband) on KH and KR to B position. Set both tension dials at 0, thread yarn and knit 1 row across.

- ⑤ Both left and right sides have now been cast on. Hang comb and weights so that they hang level. Set the carriages for circular knitting.

- ⑥ Re-set the carriages for ribbing and the tension dials at 1 and work 7 rows for neckband depth. Set the carriages for circular knitting and work 3 rounds. Change yarn, work waste knitting and remove from machine.

2 How to attach the collar

- ① Press very lightly with a steam iron. The neckband is attached in two stages, on both sides of centre back and on both sides of centre front.

- ② With the wrong side of collar facing you, fold back the waste knitting. Replace the stitches from the row of waste knitting nearest to you

on both sides of centre marker of the collar, up to within 3 cm of neck point markers. Holding the back with the wrong side toward you, pick up the stitches between the neck points and the centre of the collar, and hang these onto the machine. Push out the needles to E position and knit 1 row with the tension dial at 10. Cast off using slip stitch.

- ③ For front, replace the neckband stitches with the V point ends on each side of 0. Hang front stitches onto same needles with V point at the centre and work as for back.

- ④ The other side of the circular knitting is finished by slip stitch and sewn down on the wrong side by hand using slip stitch.

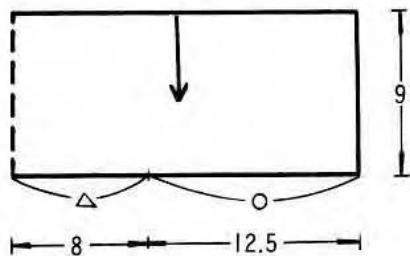
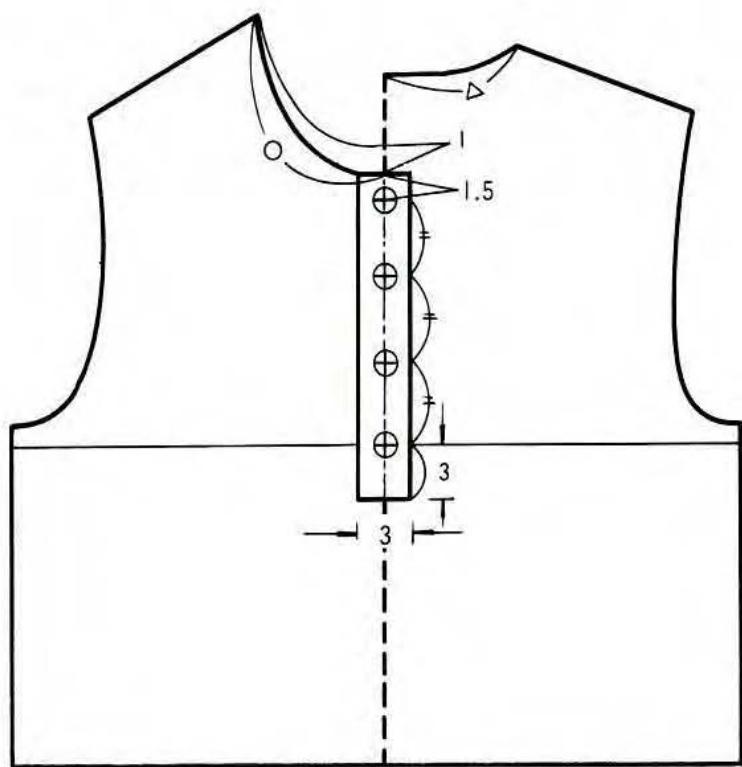
- ⑤ The V point at the front can be sewn with a sewing machine. Open out the seam and slip stitch in place.

By attaching the collar in two parts, back and front, the centre V can be finished off neatly.

Straight collar



Pattern

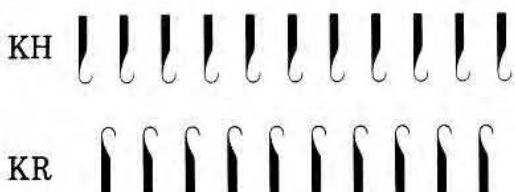


★Knit the plackets before you work the collar.

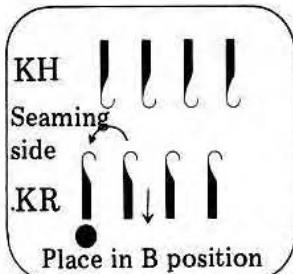
When you knit the placket, work the under side first and continue knitting the outer side. This way you can finish the plackets neatly.

1 How to work placket (Full needle rib)

① Arrange the needles for the pattern.

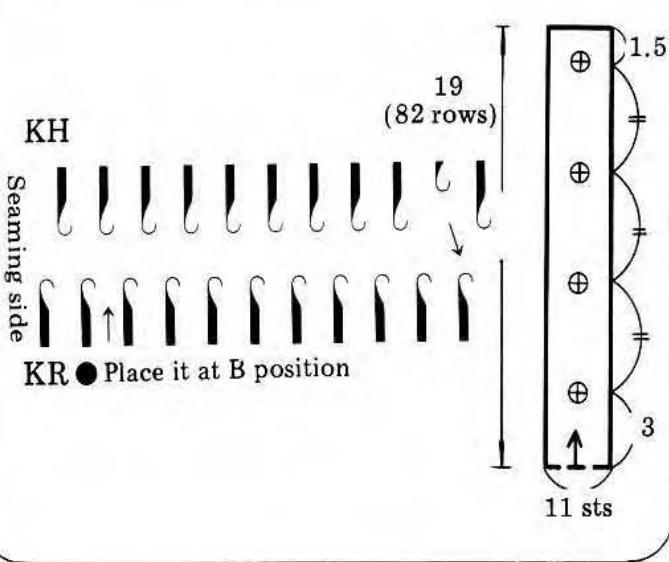


② Transfer the first stitch on the left side on KR to the next empty needle and push back the empty needle to A position.



③ Set the slide lever at I, the tension dial at 2 and knit the underside only and mark the last row.

④ With the outer side, the edge to be attached is reversed. So the needle setting should be reversed, too.



⑤ Buttonholes are worked on the outer placket. (For buttonholes refer to page 121, which gives detailed explanations on working these.)

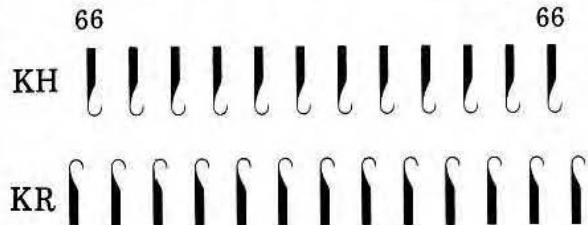
⑥ Upon completion, work a few rows of circular knitting in waste yarn and remove from machine. Finish the stitches in ribbing.

2 How to attach the plackets

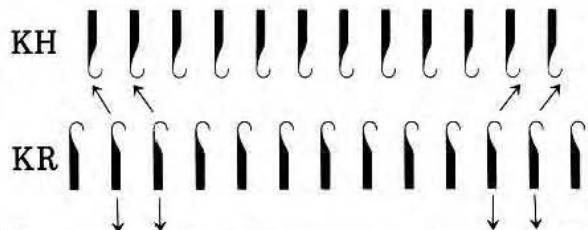
Attach the placket evenly to the front opening of the bodice and sew in blind stitch. The middle of the placket fits into the end of the front opening.

3 How to knit the collar (Full needle rib)

① Arrange the needles to the pattern and finish the edge by 1 and half rounds of circular knitting.



② Transfer the edge stitches on KR to the KH side following the direction of the arrows. Push back the empty needles to A position.



③ Set the slide lever at I, and referring to the tension adjustment chart, work the collar.

● Tension adjustment chart

8 rows	KH · KR ① 1/3
10 rows	" ②
10 rows	" ② 2/3
10 rows	" ③ 1/3

④ After the collar is finished, transfer the stitches on KR to the needles on KH.

4 How to attach the collar

① With the wrong side of garment facing you, put the stitches on the needles, matching both centre neck points.

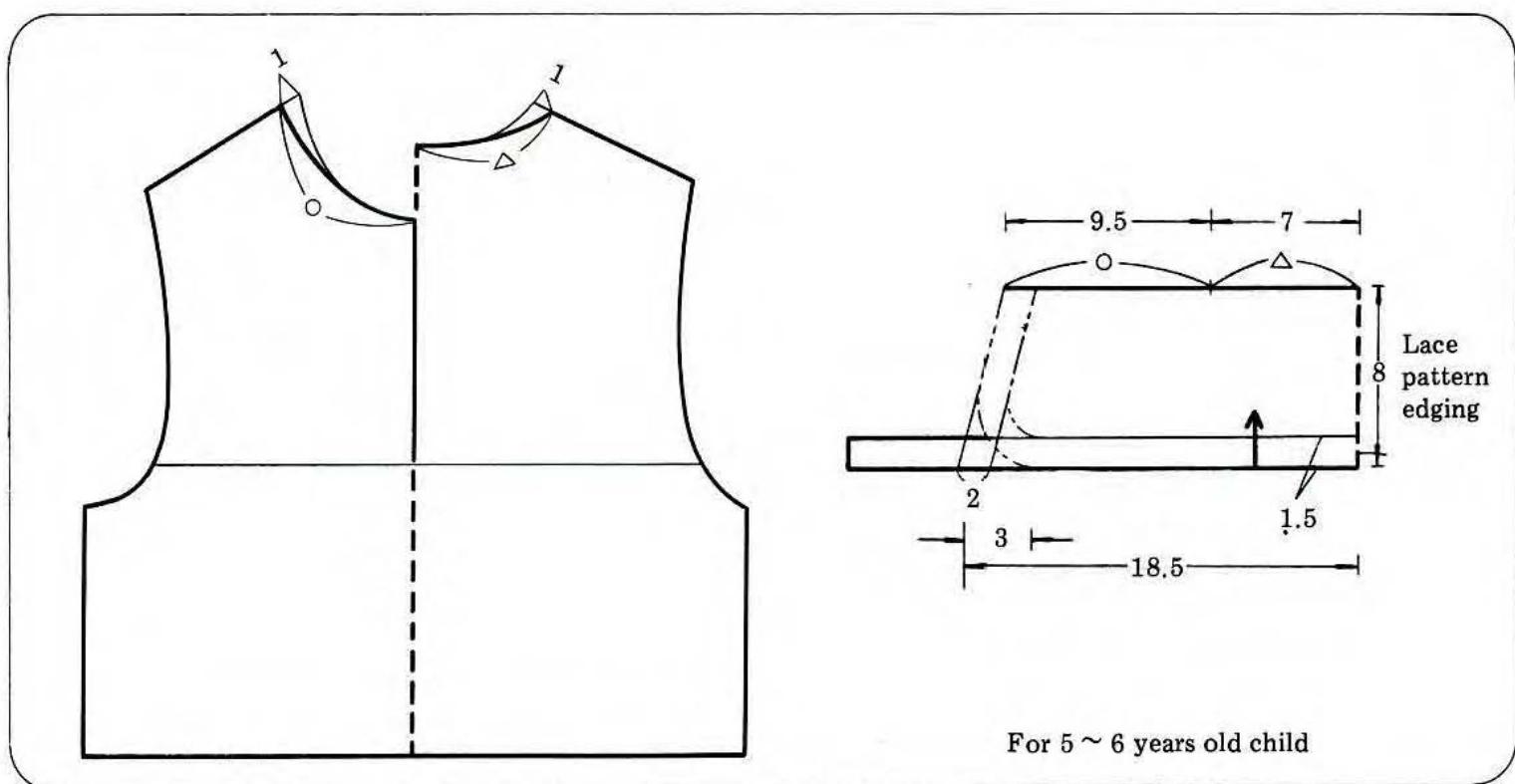
② Push out the needles to E position and adjust the tension dial to 5 and knit 4 rows. Finish the stitches by winding method beginning at the left side. Remove from the machine.

③ The 4 rows for the facing are sewn to the main garment by overcast stitch using split strands of yarn.

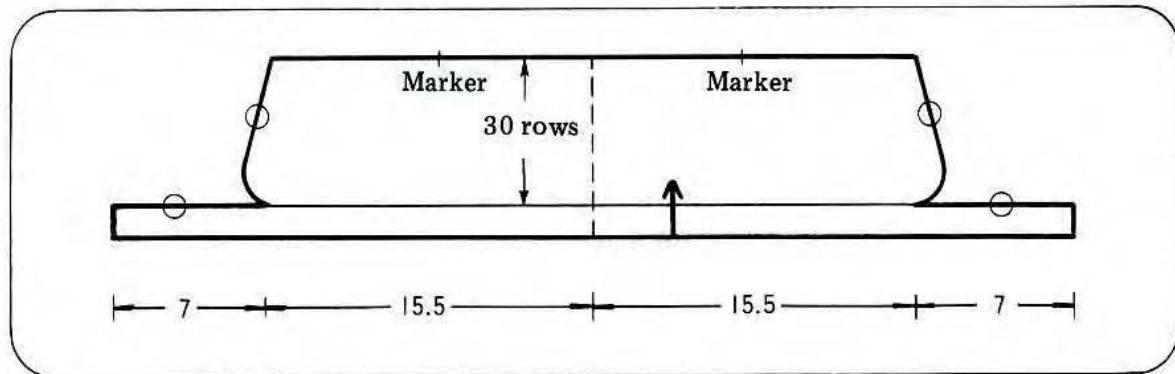
Flat collar



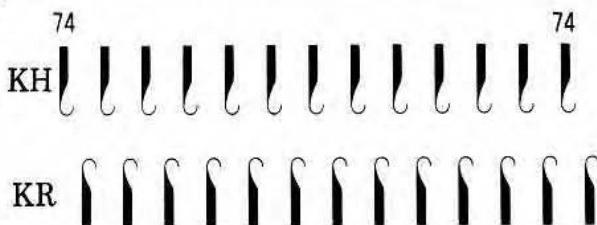
Pattern



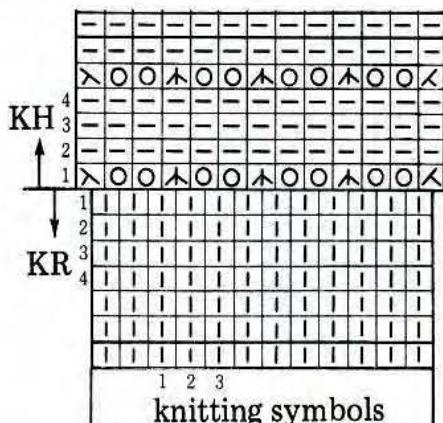
1 How to knit (Full needle rib and lace)



① Arrange the needles for the pattern as shown.



② The edging around the collar is worked in hand tooled lace.



③ Knit 10 rows of waste knitting on KH.

④ Set the tension dial at 0, the slide lever at I, and only knit 1 row. Then, transfer stitches following the knitting symbols.

⑤ Reset the tension dial to 3-1/3 and knit 4 rows. Transfer stitches as diagram. Knit 2 rows. With waste yarn work a few rows circular knitting and remove from the machine.

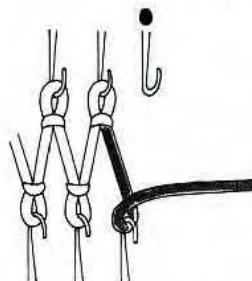
⑥ Referring to the tension adjustment chart, and shaping the sides by increases and decreases, knit the collar.

● Tension adjustment chart

KH	KR	②
"	"	② 2/3
"	"	③ 1/3
"	"	③ 1/3

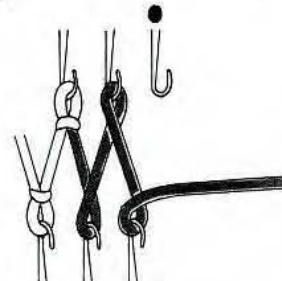
How to increase 1 stitch

• Place in B position



How to increase 2 stitch

• Place in B position

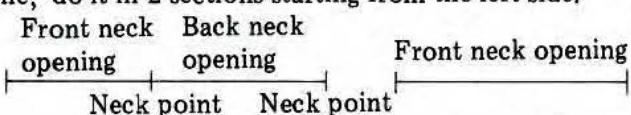


⑦ The curved corner on each side is shaped by increases and decreases according to the pattern. Last of all transfer the stitches on KR to KH needles and remove from machine after working waste knitting.

⑧ Finish lightly with a steam iron and sew on the edging strips evenly at each side.

2 How to attach the collar

Since the collar cannot be put on the machine all in one, do it in 2 sections starting from the left side.



① Place the carriage on the left-hand side and with wrong side of collar towards you, rehang stitches onto KH. Over these, with the wrong side facing you, rehang garment stitches, adjusting the Neck Point to the marker on the neck edge of the collar.

② Set the tension dial at 4 and knit 4 rows. Cast off by wrapping method and remove from machine.

③ Do the same with the remaining part of front neck opening.

④ The 4 row facing is sewn onto the main garment using split strands of yarn.

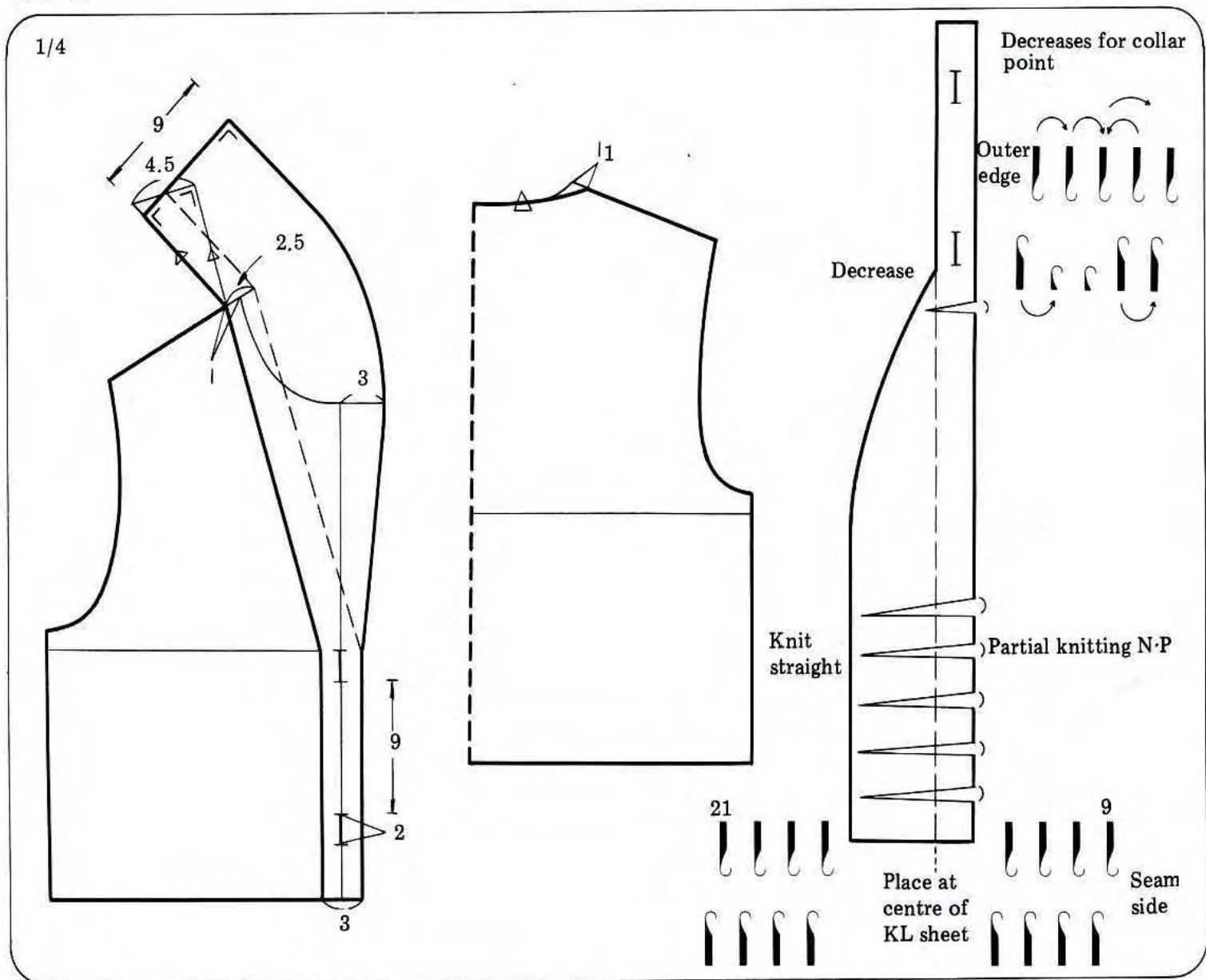
⑤ For front opening, work loops and sew the buttons on to complete.



Shawl collar



Pattern

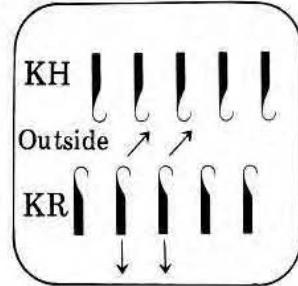


1 How to knit (Full needle rib)

① Arrange the needles for the pattern as shown in the diagram.

② Knit 1 row on both beds in waste yarn. Set the tension dial at 5, slide lever at I and knit 10 rows of circular waste knitting.

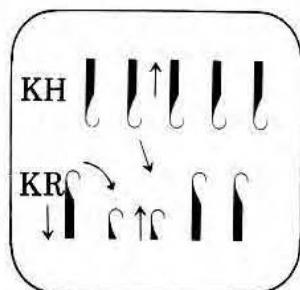
③ Change to main yarn and knit 1 row. Reset tension dial at 2 and the carriage for rib knitting. Transfer the stitches for the outer edge of the collar as illustrated following direction of arrows. Push back the empty needles to A position.



④ Follow the outline of the pattern working partial knitting every other row to cover the difference between the outer edge and the neck opening edge. At the turning point of partial knitting remember to wrap the yarn on the KH needles. Be sure to put a marker at the centre back point. The curve of the collar is shaped inside the edge stitches as diagram. Work partial knitting before you continue knitting for band.

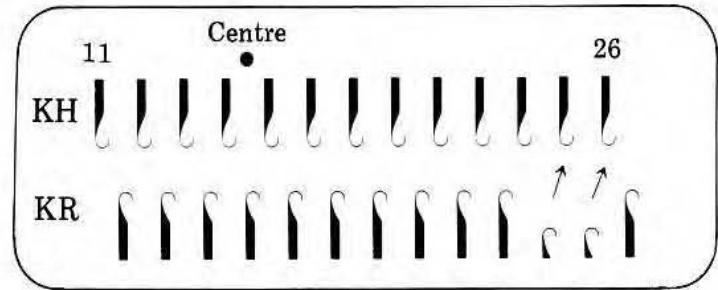
★ While the KH side is used as the right side for collar, the KR side is used as right side for the bands. So at the turning point wrap the yarn on the KR needle.

⑤ Arrange the needles for the outer edge of the band as illustrated.



⑥ At the start of the band, work a buttonhole over 5 rows immediately. Then knit until the next buttonhole position and repeat until the end of the band. Put a marker and knit about 10 rows more. Remove from machine. (For buttonholes refer to page 121).

⑦ For the other half of collar, break waste yarn and fold over waste knitting. The stitches of the first row in main yarn for KH and KR are clearly defined. Replace these stitches as shown in the diagram. (The position of needles has been reversed).



⑧ Work this side the same as for the first half, reversing the shaping.

⑨ Press lightly with a steam iron, matching the pieces to the outline of the pattern.

2 How to attach the collar

① Carriage on left. With wrong side of collar facing you, rehang stitches onto KH needles to within about 10 cm of each end, placing centre of collar at centre of machine.

② Work 4 rows at tension dial 4. Cast off the stitches by wrapping method.

③ For the remainder, attach the turning point of the collar and being careful to get an even balance, sew it onto the front in blind stitch. Continue to sew on the border in the same manner.

④ Undo the excess rows and finish the stitches in ribbing.

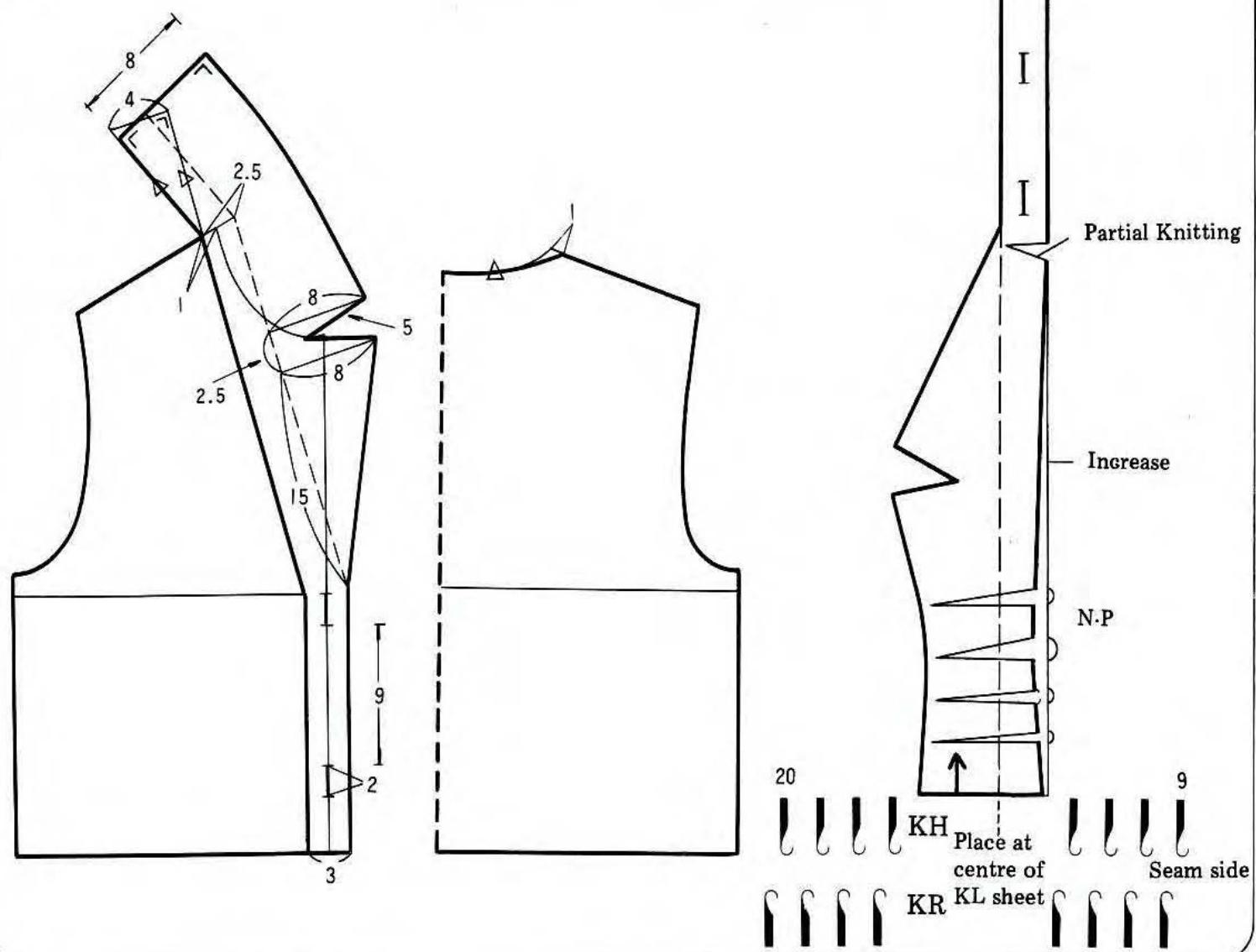


Tailored collar



Pattern

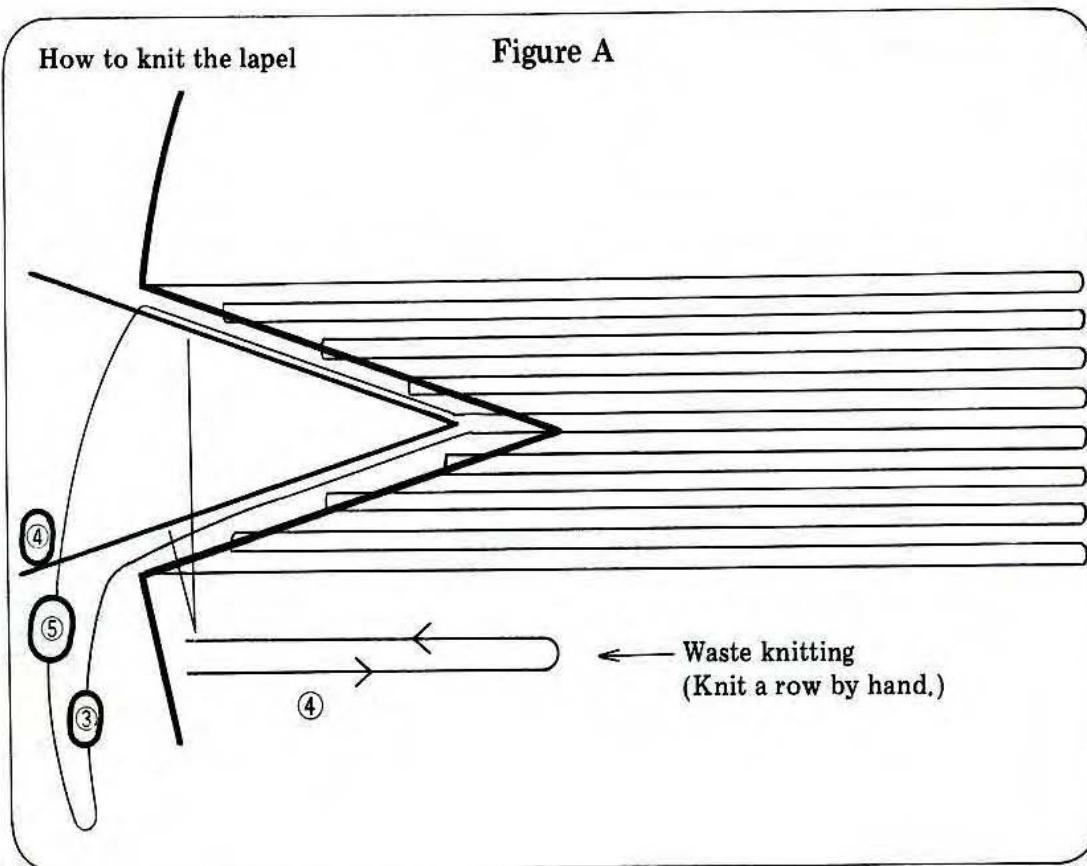
1/4



1 How to knit (Full needle rib) tailored collar

① Arrange the needles for the pattern as the diagram on previous page.

② Work the collar in the same manner as for the shawl collar. For the lapel refer to figure A.



③ After working the shaping by partial knitting, knit 1 row across all stitches.

④ Then using a piece of waste yarn, knit 1 row around on KH and KR by hand.

⑤ Leaving a loop of yarn about 30 cm long hanging down, knit to the right. Continue partial knitting of the increases as shown in the diagram. Decreases are worked in the same manner as for the shawl collar.

★ The looped yarn in 5 is used to finish the lapel.

⑥ After both sides of collar are completed, press the lapel only, very lightly with a steam iron. Unravel the waste yarn. The two edges of the lapel are separated now. Finish the decreased part in ribbing, and for the increased part, pass the yarn twice through the stitches. Block lightly with a steam iron in the shape of the pattern.

2 How to attach the collar

Do same as for the shawl collar.

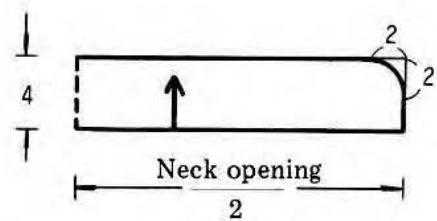
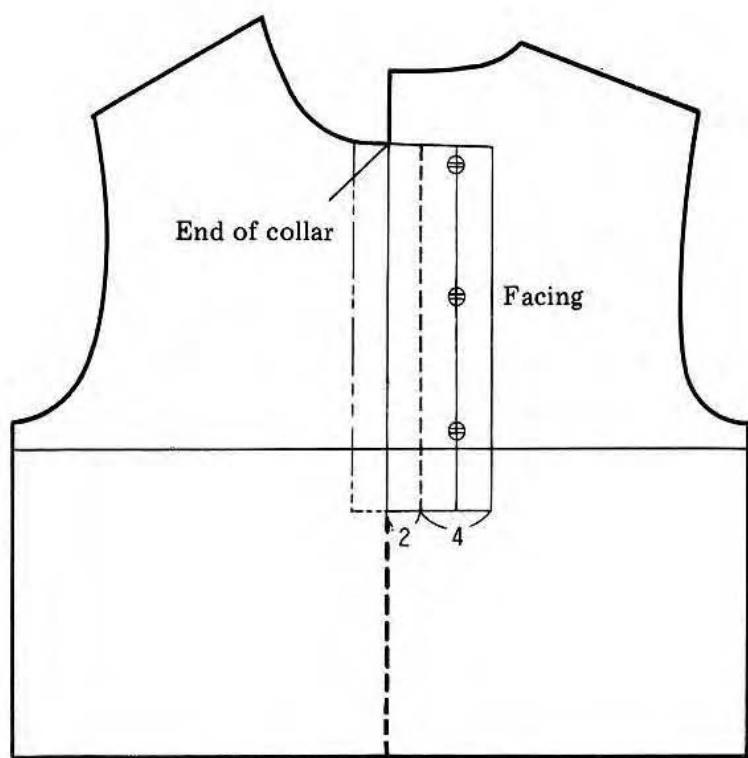


Standing collar



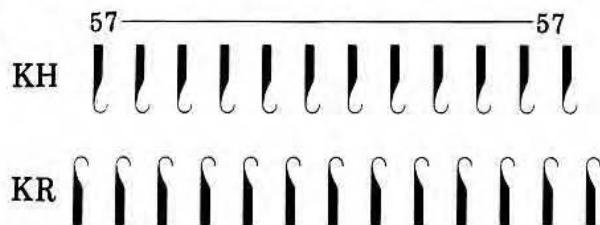
The height of the collar and curve of neck opening reflect the fashion of the time.

Pattern



1 How to knit (Full needle rib) Stand up collar 2 How to attach the collar

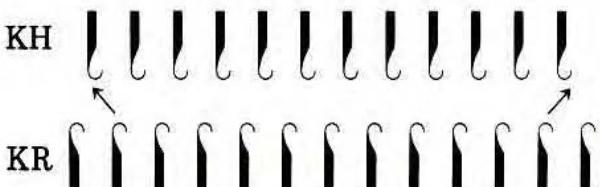
① Start knitting from the neck edge. Arrange the needles for the pattern.



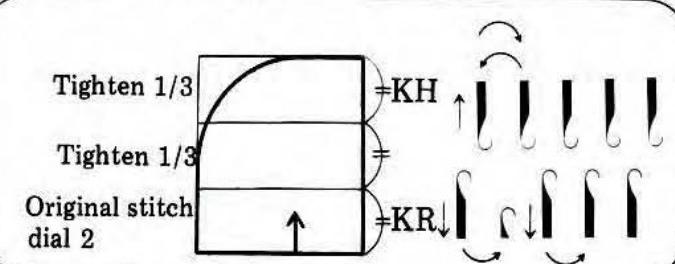
② Set the tension dial at 5, slide lever at I and using waste yarn, knit 1 row. Then work 10 rows of circular knitting.

③ Change to main yarn and knit 1 round. Set the tension dial to 2 and the carriages for rib knitting.

④ Transfer the stitches for the collar ends following the direction of the arrows.



⑤ Knit the collar, shaping the tips by decreases as shown in the diagram.



Finally, using waste yarn, work several rows in circular knitting and remove from machine. Finish the stitches in ribbing worked fairly tightly. Block lightly with a steam iron in the shape of the pattern.

Break the yarn on the first row and fold back the waste knitting. With the right side of the collar towards you, pick up the stitches on the right side and put them onto the KH. Rehang the main garment stitches with the wrong side facing you and matching the centre back neck, to the centre of the collar. Set the tension dial at 10 and knit 1 row. Cast off the stitches in slip stitch using a latch tool. Finish the stitches on the wrong side of back neck with slip stitch and sew onto the wrong side using back stitch.



The pleats worked by rib knitting are permanent and will not be damaged by washing. They can also be used for frills around a collar or lower edge of a skirt. When you work a pleated skirt, either make the lower part fuller by tension adjustment, or, if you change the tension in 4 — 6 steps it becomes narrower at the waistline, making a very flattering shape.

Recommended materials for the pleated skirt

When you make a pleated skirt by leaving some needles in non-working position, or for deep pleats, it is recommended to choose light or fine yarns. Synthetic fibres, very fine yarn, medium fine yarn, fine cotton thread, linen thread, etc. are suitable.

★ How to make a tension swatch for the garment★

Choose a tension which is both easy to knit and the stitches look right, and make this the main tension. When working pleated skirts you have to find out the exact measurement of a pleat, and calculate the exact number of stitches for that pleat. Therefore, you should cast on more stitches than usual to get an accurate measurement (80—100 stitches).

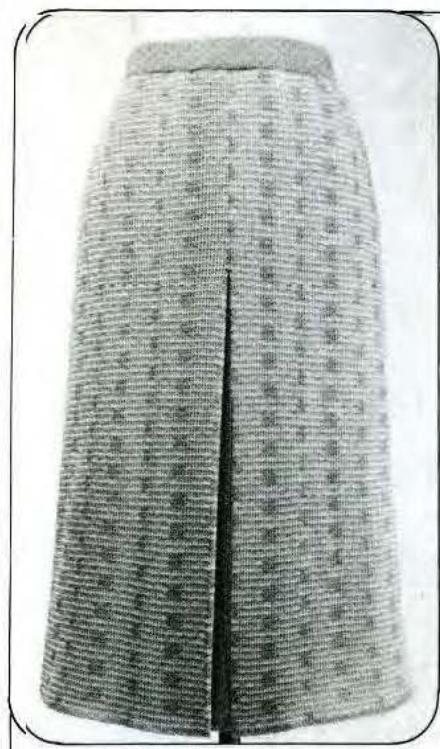
Also at the beginning and ending of your swatch knit the length a little longer (30—40 rows)

★Prepare the swatch with a steam iron★

After the swatch is finished, pat it lightly with your hands to make it settle naturally. Put the wire through the lower edge. Pull evenly and press very lightly with a steam iron (if yarn is suitable) from the wrong side, then from the right side. Turn it over and press again from the wrong side in order to adjust the shape. Turn it back to the right side and pin the waist part and fold the pleat making the fold lines neat. Press with a steam iron.

By adjusting the tension and pressing carefully the skirt will drape well.



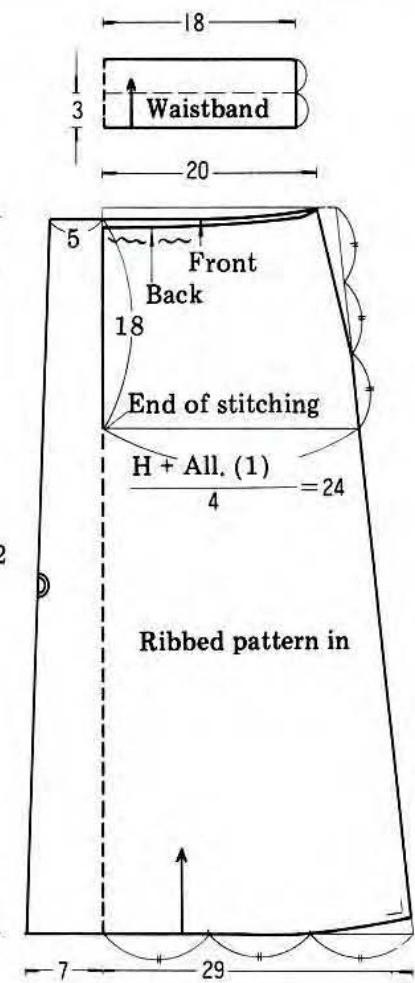
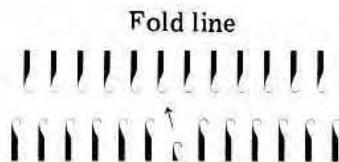
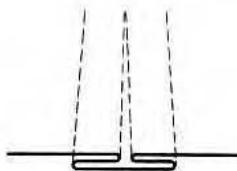
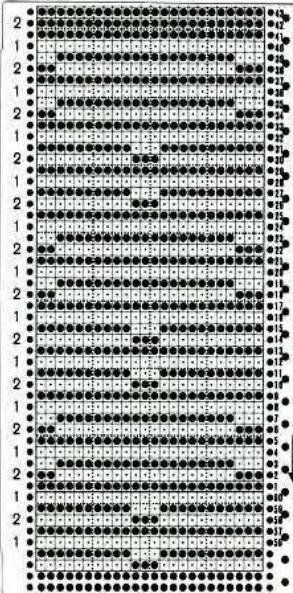


Summer yarn

Slide lever

Stitch dial

Punchcard



■ How to knit • How to finish

● Skirt

- ① The right side (multi-colour rib pattern) and inside pleat (full needle rib) are worked separately.
- ② For front of the skirt, arrange the needles for the lower edge of the pattern in full needle rib. Cast on the stitches working a "Cast on techniques" (P. 75)
- ③ Finish the edge by circular knitting tension dial at 2, then transfer the stitches for the vertical fold from KR to KH (see diagram).
- ④ Set the tension dial at 3 and work in multi-colour rib following line of pattern. Work partial knitting at the lower edge. Shape the sides by decreases (see "Decreases on full needle rib" p. 39)
- ⑤ The curve of back waist is shaped by partial knitting. Then transfer the stitches from KR to KH. Knit 1 row on right side and shadow pleat respectively. Remove each piece from machine with waste knitting.
- ⑥ For back skirt work the same as for the front except for shadow pleat.

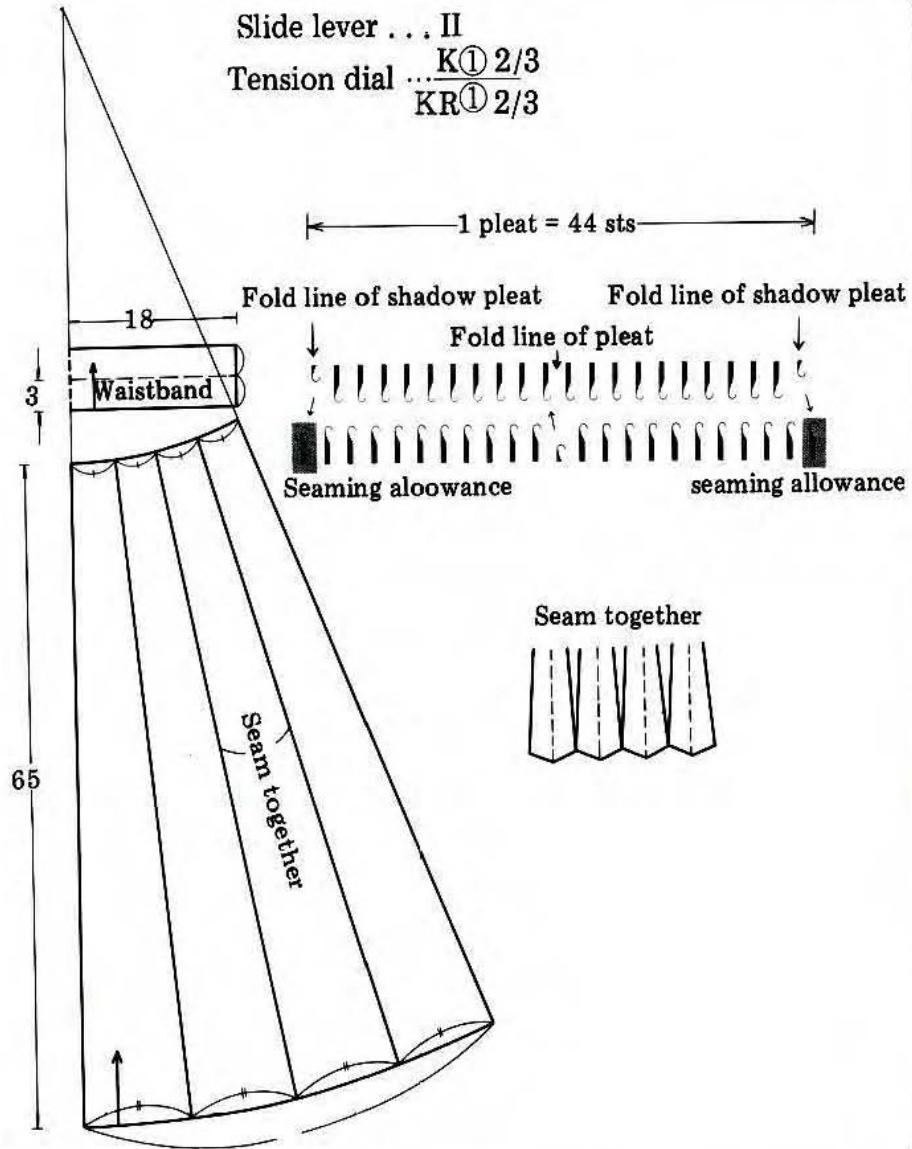
⑦ Inside pleat is worked in full needle rib. Press each piece lightly with a steam iron.

● Waistband

- ① The waistband is worked in stocking stitch. Make a tension swatch and find out how many stitches and rows are required.
- ② With the wrong side of the skirt facing you, replace the stitches of skirt onto KH, working double stitches to reduce the number. Put back the stitches for shadow pleat and inside pleat over them. Knit twice the depth of the waistband.
- ③ Pick up the stitches from the first row of the waistband and put them onto the needles. Knit 1 row and cast off the stitches by binding off method.
- Finishing
Mattress stitch pleat into position. Sew the sides by mattress stitch or by sewing machine. Pull elastic through the waistband. Press with a steam iron.



Fine yarn



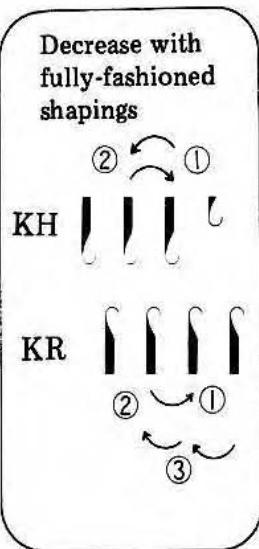
■ How to knit • How to finish

● Skirt

① The above skirt is knitted in 16 panels. Arrange the needles for full needle rib and cast on working a "Cast on techniques" (see p. 75).

② Work the finished edge with the tension dial at 1, then transfer the stitches as the diagram.

③ Set the tension dial at 1.2/3 and knit the skirt shaping the sides with fully-fashioned decreases and putting markers on each side.



④ At the end of the knitting, transfer the stitches on KR to KH. Knit 1 row and remove from machine with waste knitting.

⑤ Work 16 panels in the same manner. Press each panel lightly with a steam iron and adjust the fold-lines.

● Waistband

① Sew the 8 pieces together. The same as for an inverted pleat skirt, replace the stitches with the wrong side of the skirt facing you, working double stitches to reduce the excess number. Knit twice the length of the waistband.

② Pick up the stitches from the first row of the waistband and put them back onto the needles. Knit 1 row and cast off the stitches by wrapping method.

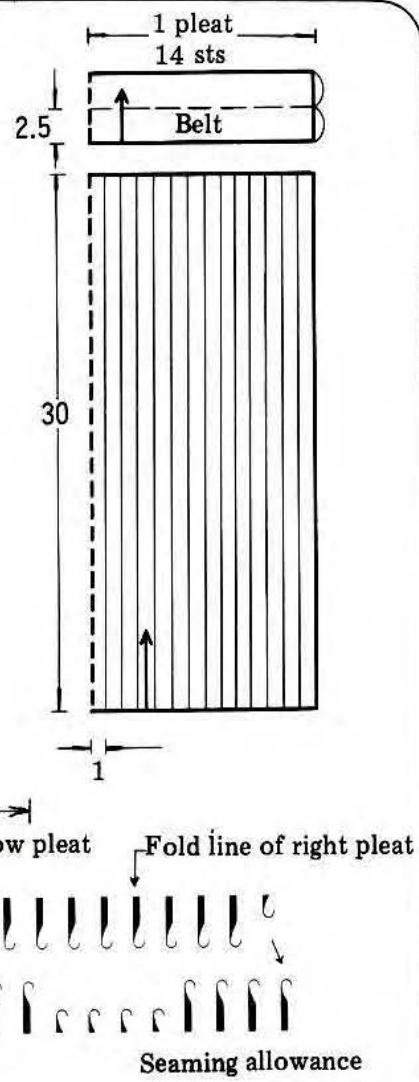
● Finishing

Sew the sides by blind stitch. Pull elastic through the waistband. Press lightly with a steam iron.



Fine yarn

Cam lever ... II
Tension dial ... K②
R②



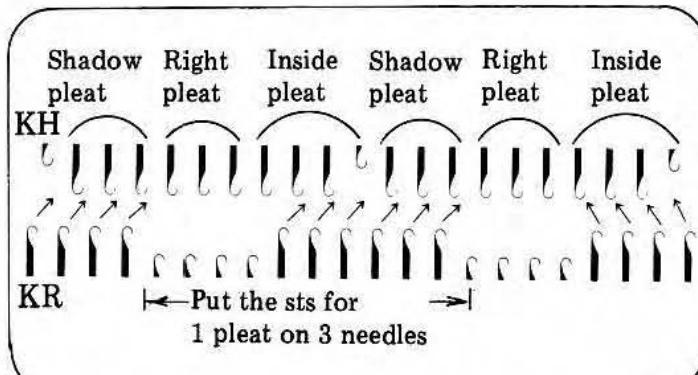
■ How to knit and finish

● Skirt

- ① Arrange the needles as full needle rib. (Calculate the number of needles so that the edge stitches are used for the seam allowance.)
- ② When cast on edge is complete transfer the stitches as the diagram. Knit the length of the skirt.
- ③ Transfer all the stitches from the KR to the KH. Knit 1 row. Change to waste yarn, knit a few rows and release from machine.
- ④ Press lightly with a steam iron.

● Waistband

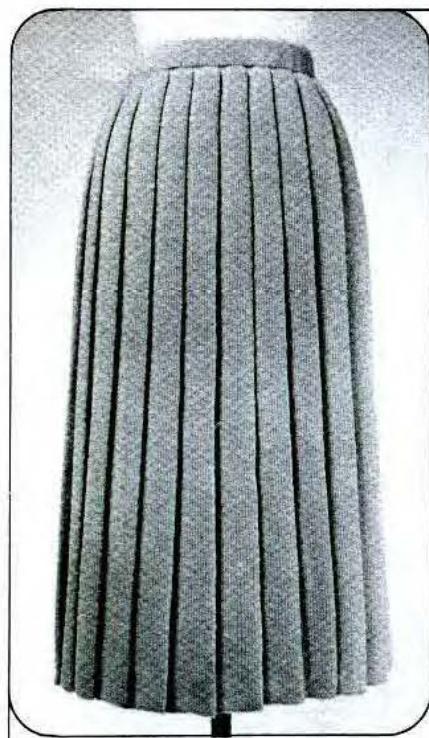
- ① With the wrong side of the skirt facing you replace the stitches back onto the main bed, so that the 3 stitches of the right pleat will be on the right side of the garment. Knit twice the length of the waistband in stocking stitch.
- ② Pick up the stitches from the first row of the waistband and put them back onto the corresponding needles. Knit 1 row and cast off.



● Finishing

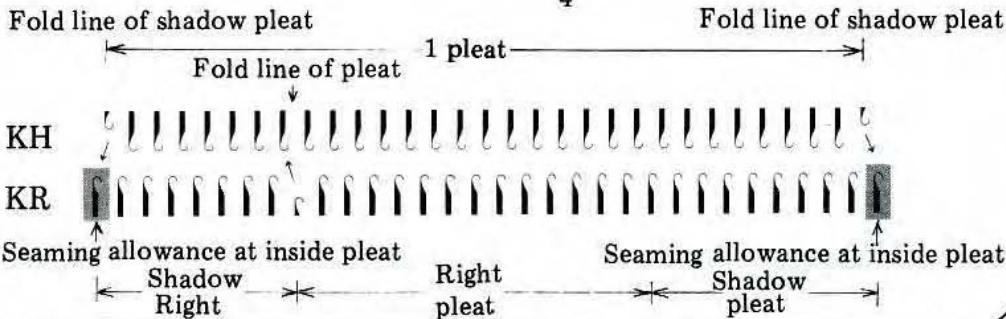
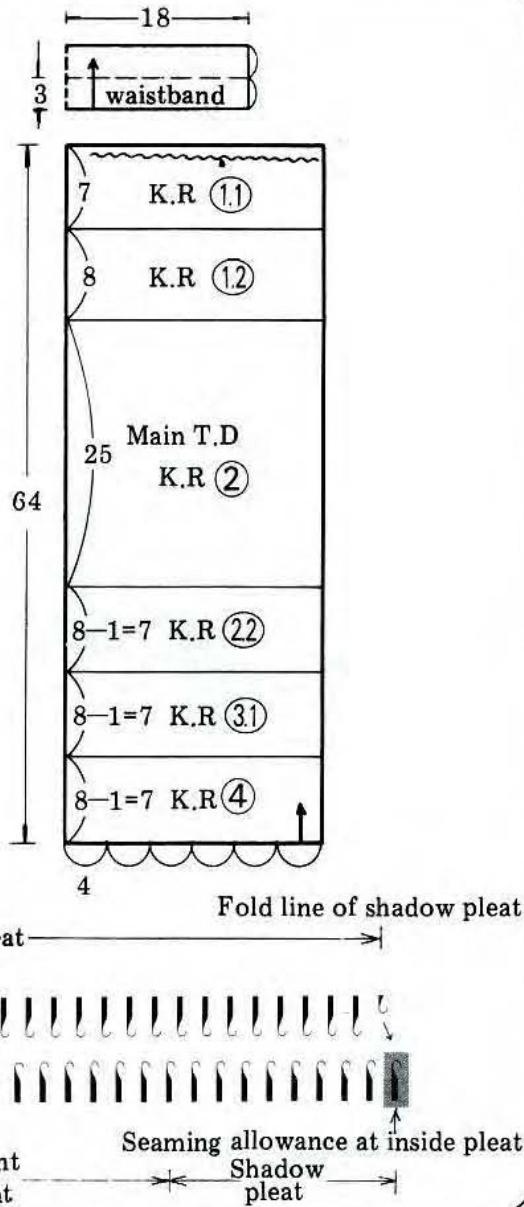
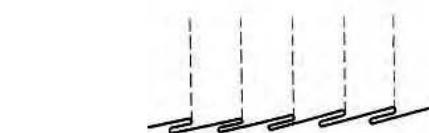
Sew side seams using mattress stitch. Pull the elastic through the waistband. Press lightly with a steam iron.

knife pleated skirt



Fine yarn

Slide lever . . . II
Adjust gauge by tension dial



■ How to knit and finish

● Skirt

- ① Make a swatch in full needle rib. Fold the pleats on it as you wish. Count how many stitches are used for 1 pleat and transfer the stitches at the fold line as the diagram above. Then make a swatch again based on that needle arrangement.
- ② Arrange the needles for the lower edge in full needle rib. Adjust the number of needles so that the edge stitches are used for the seam allowance at the inner foldlines of the pleats. Cast on the stitches with a closed edge cast on followed by circular knitting.
- ③ After the finished edge has been worked by circular knitting, transfer the stitches as the diagram above or as your swatch.
- ④ Knit for the length of the skirt, adjusting the tension dial and putting markers each time you tighten the tension.

⑤ Press the garment lightly with a steam iron so that the pleats lay in the right direction on the outside.

● Waistband

- ① Fold the pleats with the wrong side of the skirt facing you, and replace the waist stitches onto KH, working double stitches as appropriate for the number of stitches for the waistband. Knit double the depth of the waistband in stocking stitch.
- ② Pick up the loops of the first row of the waistband and put them back on the corresponding needles. Knit 1 row and cast off the stitches by binding method.

● Finishing

Seam the sides by mattress stitch. Pull elastic through the waistband. Finish with a steam iron following the natural silhouette of the skirt with a little fullness in the lower part.

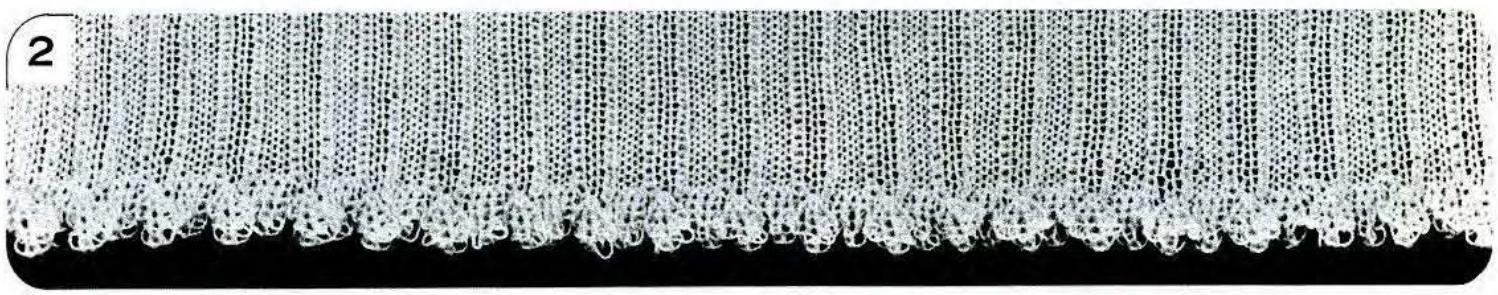
Frill

Frills are applied around the neck opening, cuffs, lower edge of a dress, etc. as a design point to add a feeling of luxury to the article.

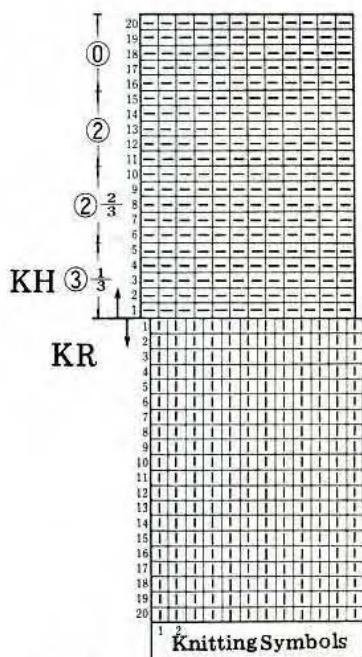
1



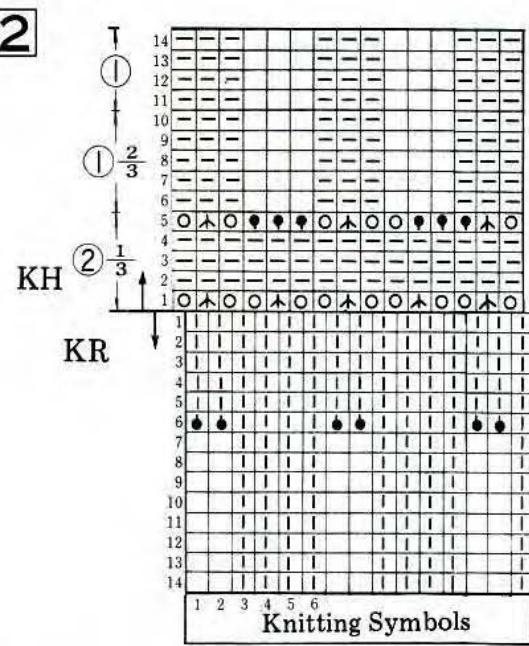
2



1



2



① How to knit

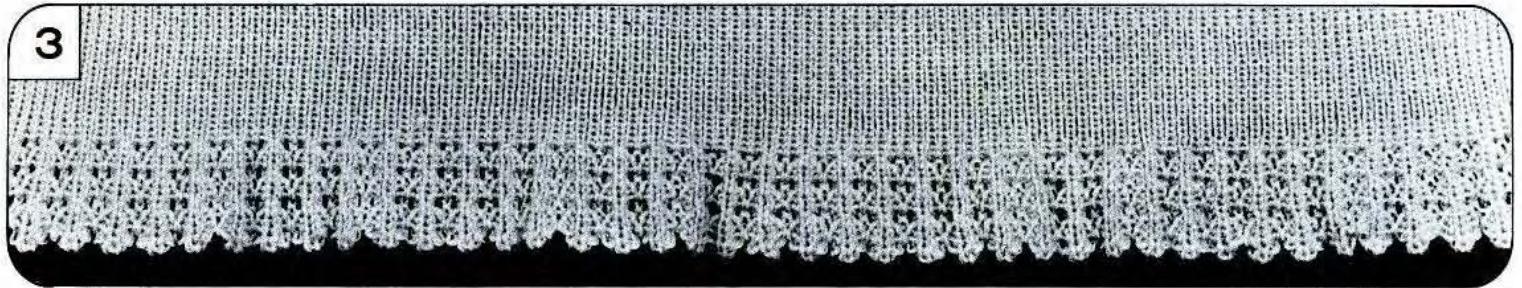
Slide lever I, Tension dial . . . (see chart)

- ① Arrange the needles for the width of the frill in full needle rib. Cast on the stitches. (Do not finish the edge by circular knitting.)
- ② Knit 20 rows adjusting the tension.
- ③ Transfer the stitches on KR to KH. Work waste knitting and remove from machine.

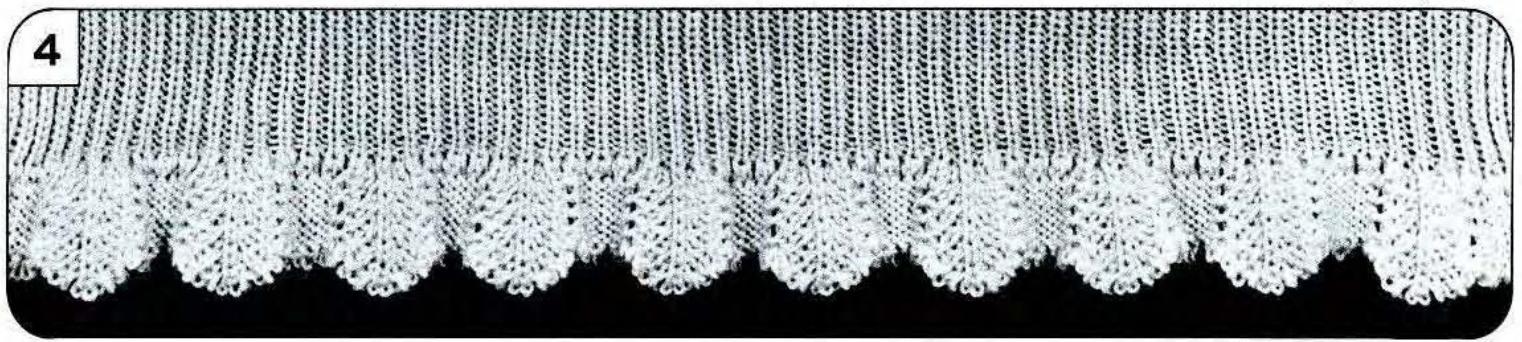
② How to knit

Slide lever I, Tension dial . . . (see chart)

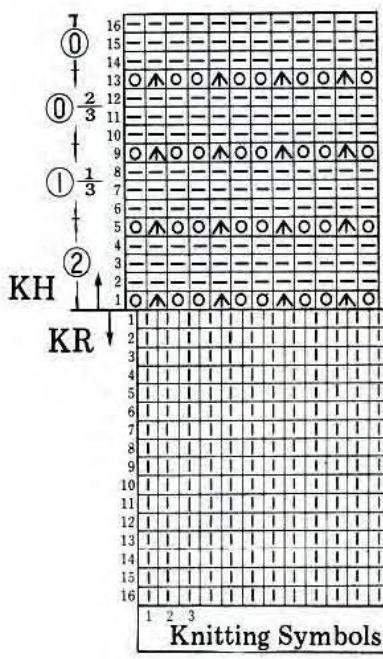
- ① Arrange the needles for the width of the frill in full needle rib. (Stitches for 1 pattern × number of patterns) + edge stitches and seam allowance).
- ② Work three stitches together according to the diagram. Knit 4 rows.
- ③ Work three stitches together and Knit 1 row. Then, transfer the marked stitches from KR to the corresponding needles on KH.
- ④ Work the given number of rows adjusting the tension. Transfer the stitches on KR to KH needles. Work waste knitting and remove from machine.



Medium/fine yarn



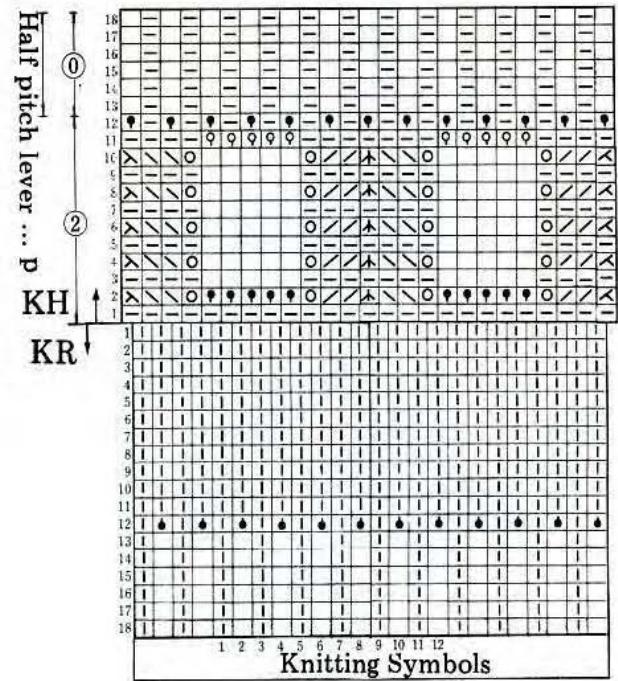
Medium/fine yarn



3 How to knit

Slide lever I, Tension dial . . . (see chart)

- ① Arrange the needles for the width of the frill in full needle rib. (Adjust the number of stitches to be in multiples of pattern + edge stitches and seam allowance.) Cast on the stitches.
- ② Continue in pattern working three stitches together according to the diagram, then knit 4 rows.
- ③ Continue in pattern according to the knitting symbols, and transfer the stitches on KR to KH. Work waste knitting and remove from machine.



4 How to knit

Slide lever . . I, Tension dial . . . (see chart)

- ① Arrange the needles for the width of the frill in full needle. Cast on the stitches and knit 2 rows.
- ② Transfer stitches according to the diagram.
- ③ Knit 2 rows and transfer stitches.
- ④ Knit until row 10. Then knit 2 rows in full needle rib. Change the half pitch lever to P. Transfer every other stitch on KR to KH, and the stitches on KH to KR so that the stitches are in 1 x 1 rib
- ⑤ Adjust the tension dial and knit the required number of rows. Transfer the stitches on KR to KH waste knit and remove from machine.

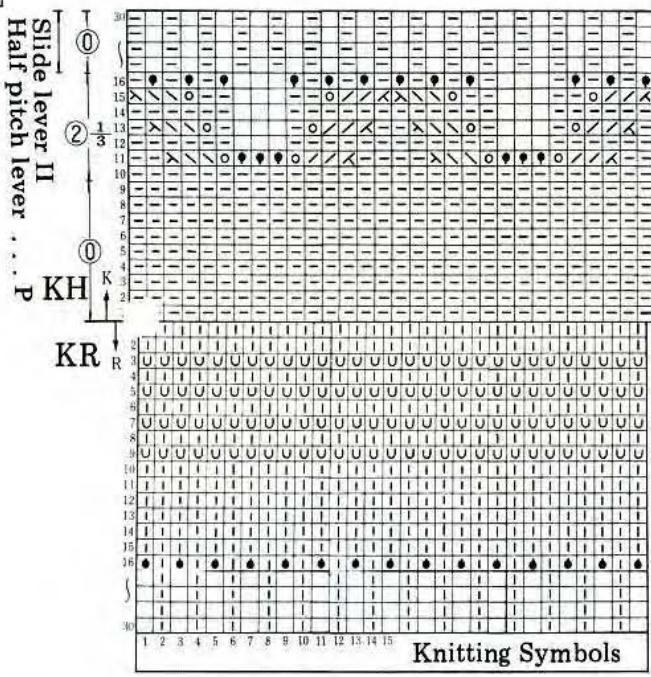
5



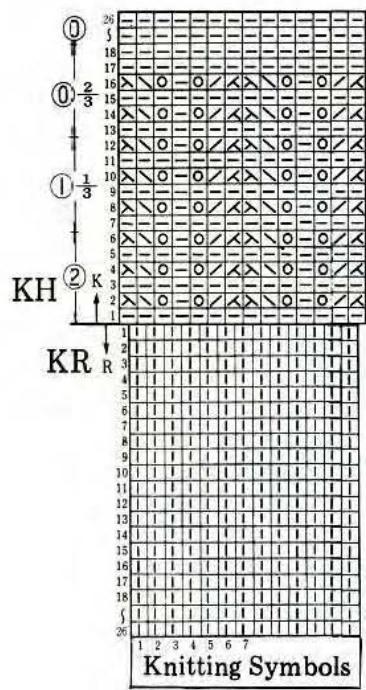
6



5



6



5 How to knit

Slide lever . . . I, Tension dial . . . (see chart)

- ① Arrange the needles for the width of the frill in full needle rib and cast on the stitches.
- ② Knit 1 row in full needle rib. Then change the setting of the carriage for English rib and work 8 rows.
- ③ According to the diagram work 2 rows of full needle rib and transfer stitches.
- ④ Transfer stitches every other row twice then knit 1 row.
- ⑤ Adjust the half pitch lever to P. Transfer the stitches on KR to KH and KH stitches to KR. Work required number of rows in 1 x 1 rib. Transfer the stitches on KR to KH. Work waste knitting and remove from machine.

6 How to knit

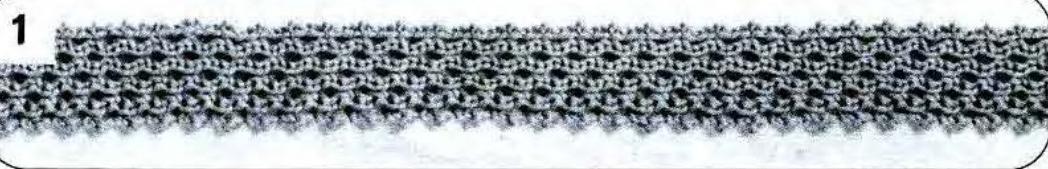
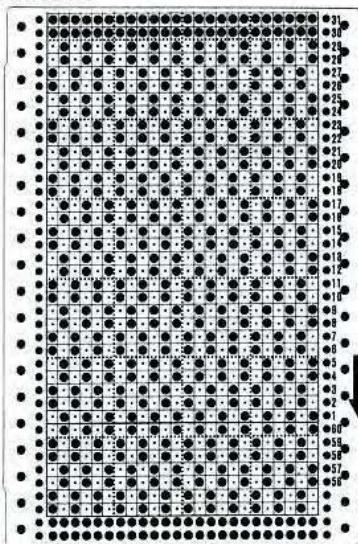
Slide lever . . . I, Tension dial . . . (see chart)

- ① Arrange the needles for the width of the frill and cast on the stitches.
- ② Work 2 rows of full needle rib. Transfer stitches according to the diagram.
- ③ Knit required length transferring stitches every row and adjusting the tension. Knit required length in full needle rib. Transfer the stitches on KR to KH. Waste knitting and remove from machine.

Braid

Knitted articles require special techniques to finish the edge stitches. However if you use a cord or braid, which are comparatively easy to handle, for finishing the edges, not only can you prevent the edge stitches from stretching, but if you use it as part of your design, you may get an unexpectedly good effect.

Punchcard

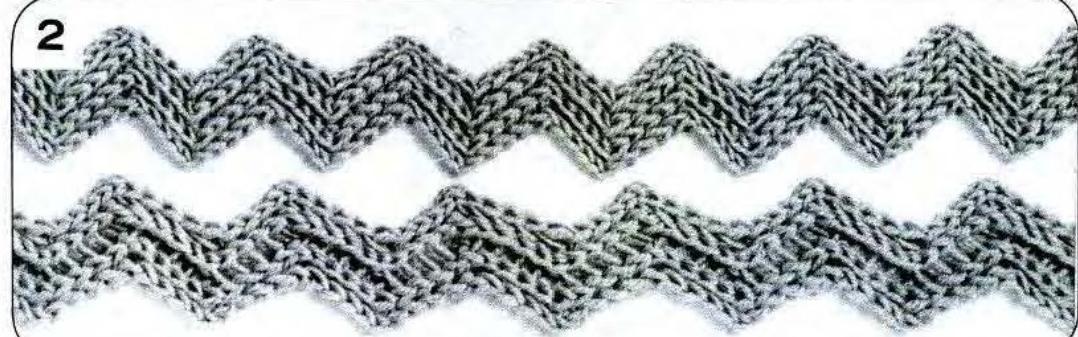
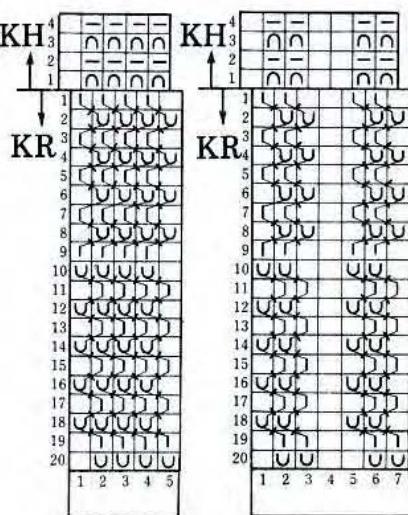
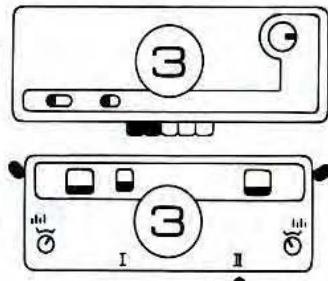


Medium fine yarn

● How to knit

- ① Arrange 5 needle on KH and 6 needles on KR for full needle rib.
- ② Knit 1 row with stitch dial at 0 and work circular knitting.
- ③ Insert the punch card and set the carriages as the diagram and knit for the required length.

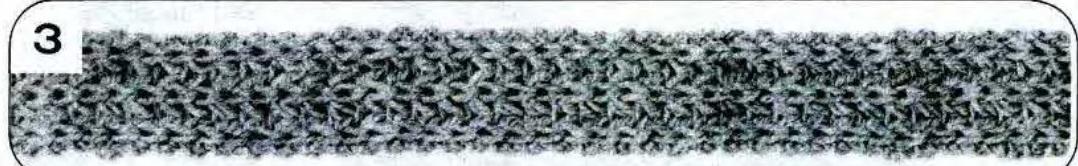
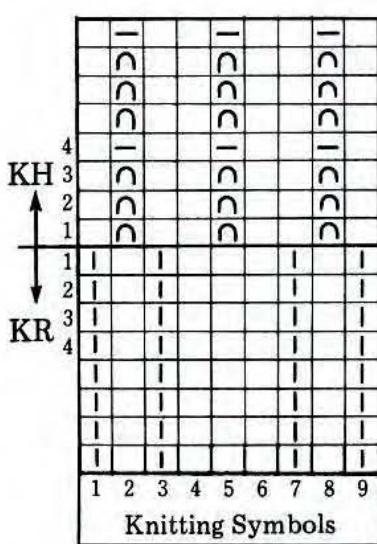
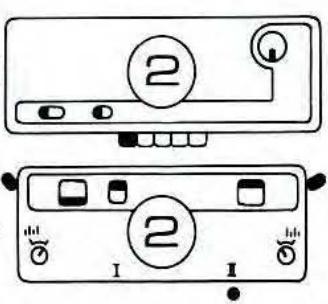
KR



Medium fine yarn

● How to knit

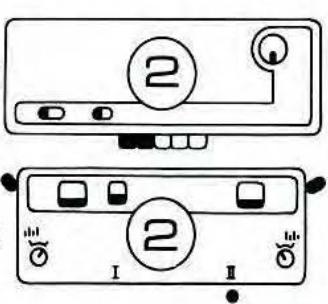
- ① Arrange the needles according to the diagram. Work the finished edge by 1 and a half rounds of circular knitting. (Hang L-shaped wire KH hanger and a large weight.)
- ② Set the carriages as the diagram and knit until 9th row racking every row following the diagram. Knit the 10th row without racking.
- ③ Work for the required length repeating the KR above operations. Alternatively, work in the same manner putting 2 centre needles in non-working position.



Medium fine yarn

● How to knit

- ① Arrange the needles for 1x1 rib and finish the edge by 1 and half rounds of circular knitting.
- ② Change the needle position according to the KH diagram. (Use L-shaped wire hanger and a large weight.) Set the carriage as the diagram and knit 3 rows.
- ③ Knit the 4th row in stocking stitch. Repeat the above operation to the required KR length.



Trimming

Trimming is used not only for ornamental purposes but it also forms part of the finished garment. Unlike the single bed knitting machine, garments made on the double bed are not finished with a facing. Even garments in thin yarns are finished with trimmings to help them keep their shape and prevent them from stretching.

Trimming with circular knitted braid

Since braid in circular knitting has no right or wrong side, it is often used for trimming a collar which is a continuation of the bodice, such as tailored or shawl collars.



Very fine (Single strand)

● How to knit... circular knitting

1 (5 sts)

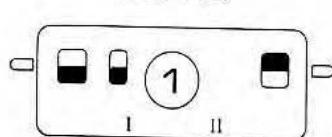
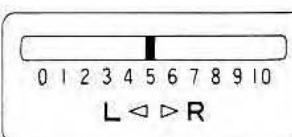
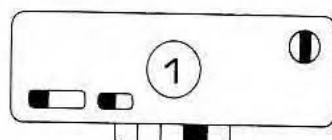
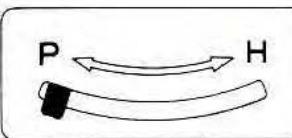
① Arrange the needles. KH



② Set the half pitch lever at H, stitch dial at 0 and cast on the stitches. KR

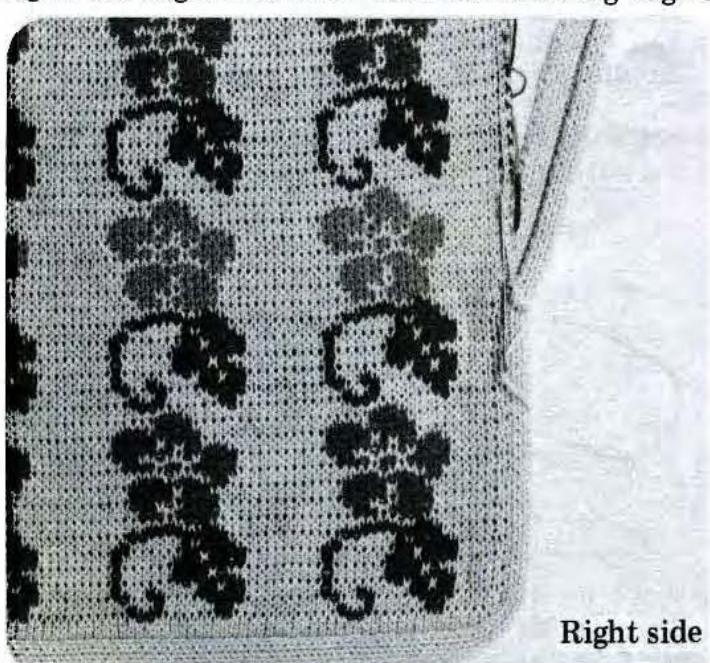


③ Set each bed as the diagram, and knit the length 3 ~ 5cm longer than the length on the pattern. Press it lightly with a steam iron to the required length. Sew it on to the bodice evenly.

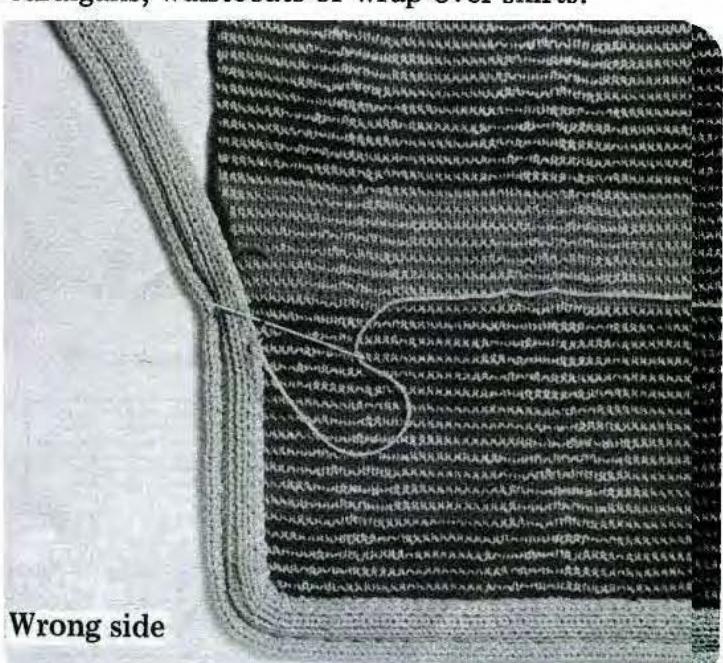


Trimming with folded braid

This type of braid is especially recommended for the garment worked in fairisle where the yarns are showing at the edge. It is often used for finishing edge-to-edge cardigans, waistcoats or wrap-over skirts.



Right side



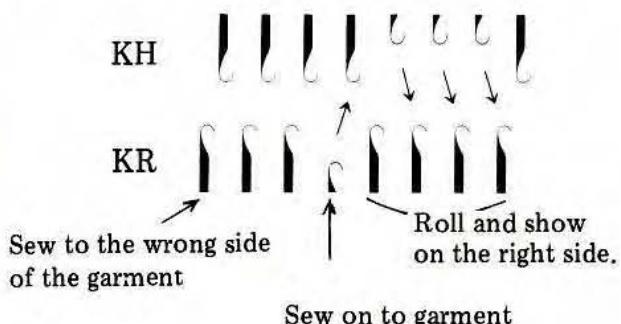
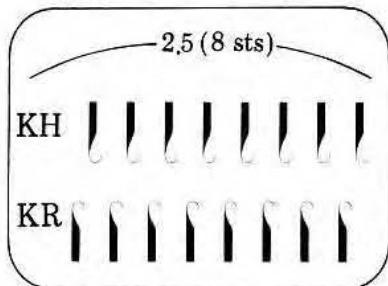
Wrong side

Very fine (Double strand)

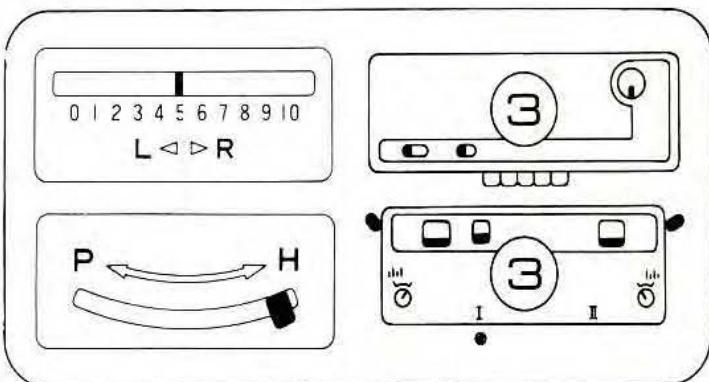
● How to knit . . . Full needle rib

(KR side is used for right side.)

- ① Arrange the needles.
- ② Cast on the stitches and finish the edge by 1 and a half rounds of circular knitting.
- ③ Transfer the stitches as the diagram and place the empty needles in A position.



- ④ Set each part as the diagram and knit 3 ~ 5cm longer than the measurement. Press lightly with a steam iron then sew it evenly to the garment.

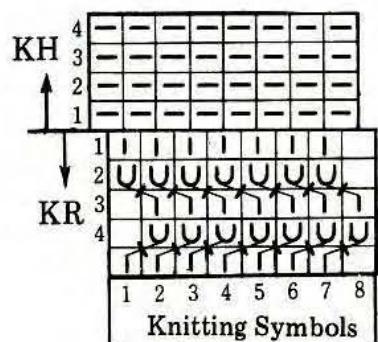


Trimming with racking pattern in English Rib

Since the edge stitches of English rib are firm, it is best recommended for a border or edges. When the curve of the outer edge is large you can trim it easily due to the high elasticity.



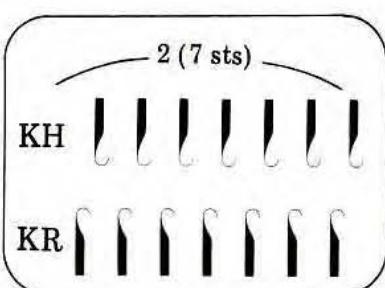
Medium yarn



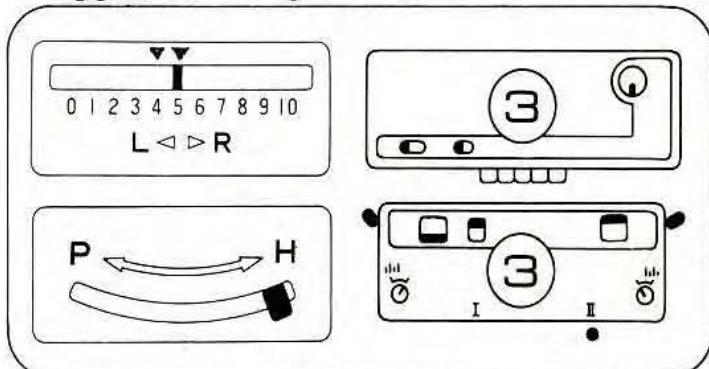
● How to knit Racking pattern in English rib.

- ① Arrange the needles.

- ② Cast on the stitches and finish the edge by 1 and a half rounds of circular knitting.



- ③ Set each bed as the diagram and work in racking pattern of English rib.



- ④ Work 3 ~ 5cm longer than the measurement. Press lightly with a steam iron. Sew the trimming on being careful to get even distribution.

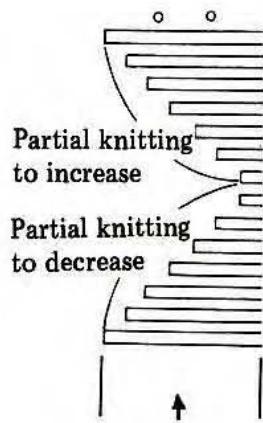
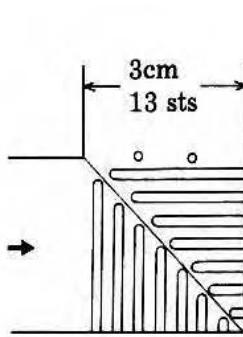
You can work a right angle or a curve by partial knitting. They are often used for a front opening of a cardigan or a jacket to trim the edges continuously from the lower edge.



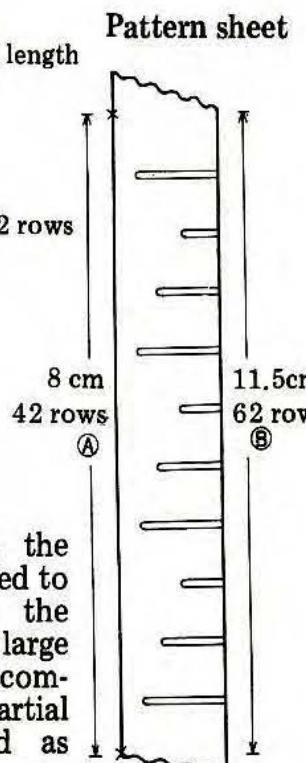
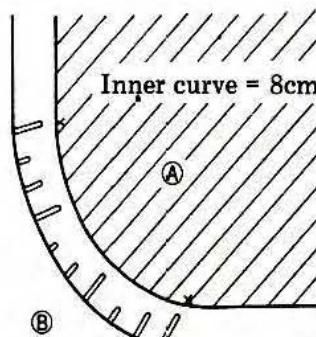
Medium fine yarn

● **How to knit . . . Full needle rib**

- ① Set the tension dial at 3 and knit until the corner of the right angle, or the beginning of a curve.
- ② Set the carriages for partial knitting and work the corner or the curve. When returning the carriage, wrap the yarn over the stitch on the needle which will be on the right side. After the corner or the curve has been finished continue to knit for the required length.



Work the curve by 3 steps of varied length partial knitting



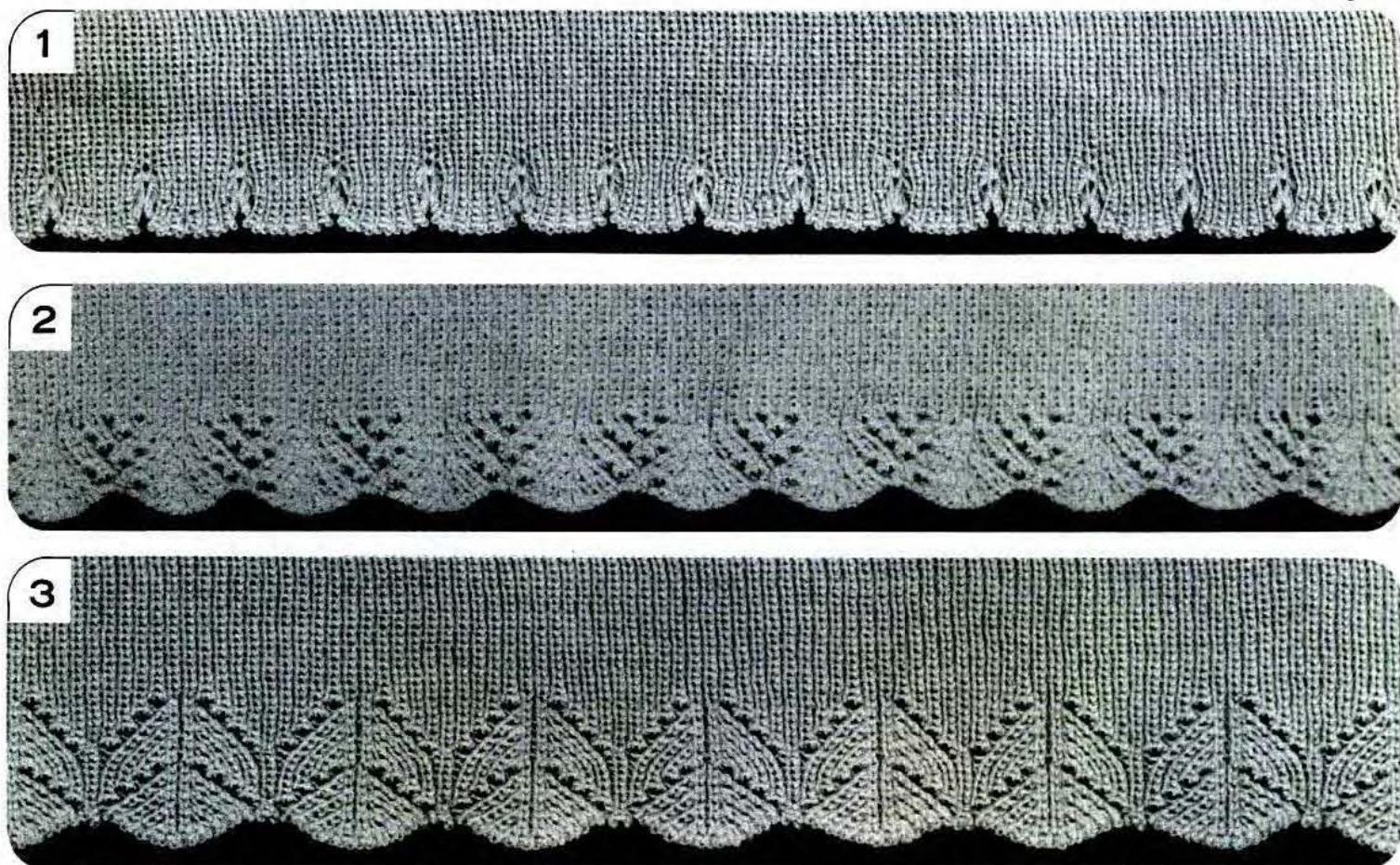
The smaller the curve is, the more frequently you will need to work partial knitting on the corner. However when a large curve is trimmed with a comparatively narrow braid, partial knitting may be omitted as pressing with a steam iron can stretch it sufficiently.

- ③ Press edging lightly with a steam iron and attach edging on either side of curve or corner. For the angle itself, pin edging at each end and sew on evenly by blind stitch.

Scallops

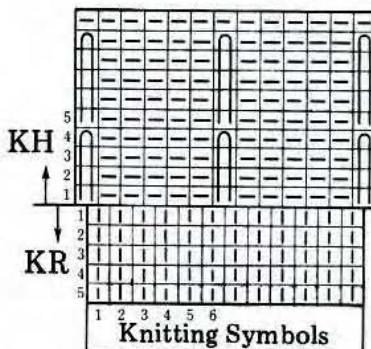
Scallops are a kind of ornamental edging often used for collars, cuffs, lower edges or at the yoke line. By using contrasting colours, the effect will be greater.

Medium fine yarn



① How to knit

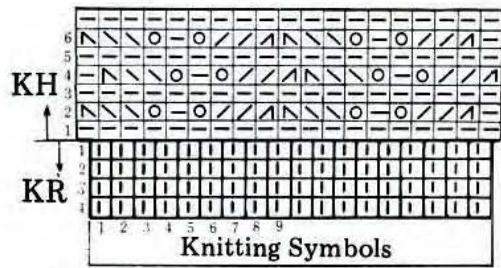
- ① Arrange the needles in B position for the length of the scallops in full needle rib. (Scallop measurement = multiple of 1 scallop + edge stitches and seam allowance)
- ② Set the tension dial at 0 and cast on the stitches.
- ③ Adjust the tension dial to 4. Set every 6th needle on KH to E position and holding cam lever at "H" and knit 4 rows.
- ④ Reset the lever to N and knit 1 row.
- ⑤ Repeat ③ ~ ④ once again.



- ⑥ Work full needle rib for required length.

② How to knit

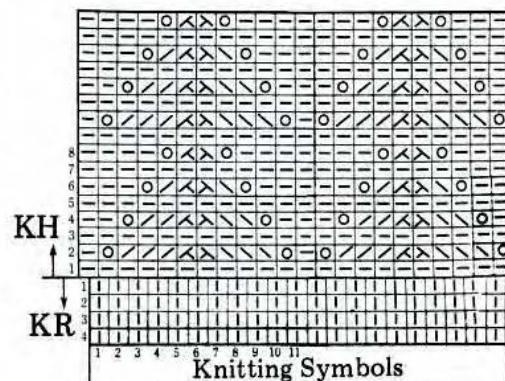
- ① Arrange the needles in B position for the length of the scallops in full needle rib. (Scallop measurement = multiple of 1 scallop + edge stitches and seam allowance)
- ② Set tension dial at 0 and cast on the stitches and finish the edge by 1 and half rounds of circular knitting.
- ③ Adjust the tension dial to 4 and knit about 10 rows transferring stitches every other row according to the diagram.



- ④ Knit required number of rows in full needle rib.

③ How to knit

- ① Arrange the needle in B position for the length of the scallops in full needle rib. (Scallop measurement = multiple of 1 scallop + edge stitches and seam allowance)
- ② Set the tension dial at 0 and cast on the stitches and finish the edge by 1 and half rounds of circular knitting.
- ③ Reset the tension dial at 4. Transfer stitches every other row following the knitting symbols until 2 patterns are worked.



- ④ Knit required number of rows in full needle rib.

Buttonholes

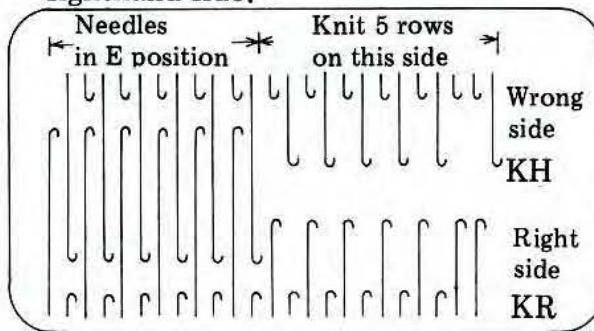
Buttonholes should be made in the most suitable manner considering the garment, the shape and the size of the buttons. If this is not done, the buttons will not go through easily and the garment won't hang properly.

Vertical buttonhole

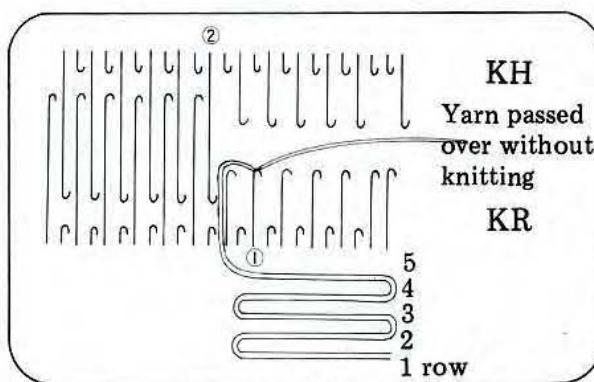
At the buttonhole position knit the left side and the right side separately. In this way you can make a neat and solid buttonhole and you may not need to finish the edge afterwards. They are recommended for buttons with 1.8 – 2 cm diameters.

● How to knit

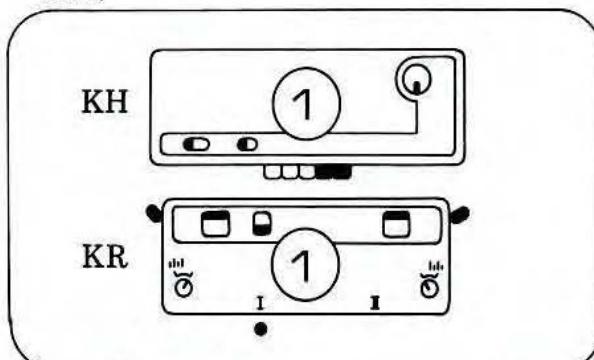
- ① Set the carriage for ribbing and knit until the buttonhole position.
- ② Set the carriage for partial knitting. Set the needles on the left to E position. Knit 5 rows on the needles at the righthand side.



- ③ As illustrated by the diagram hook the yarn on the needle marked 1. Set the carriage for "PART" and pass the carriage to the righthand side.

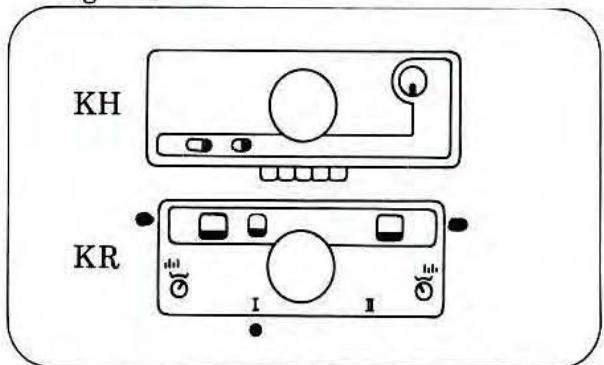


- ④ Set the carriages as the diagram and knit a row over the needles in E position.

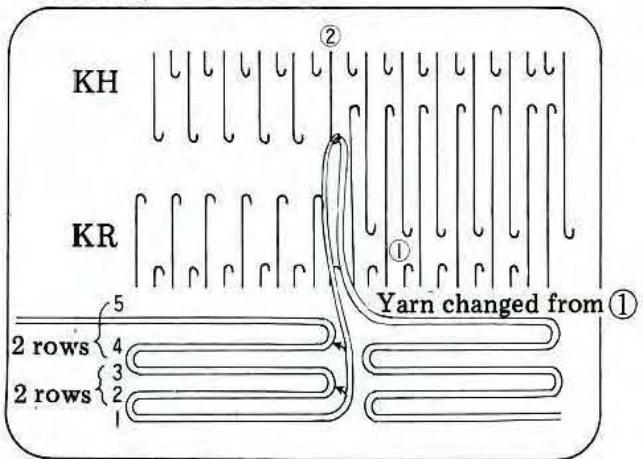


⑤ Change the position of the yarn which is hooked on needle (1) onto needle (2) on KR.

⑥ Arrange the needles on the righthand side on which the 5 rows have been knitted and reset the carriages as the diagram.



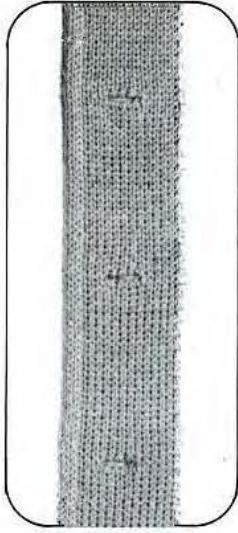
⑦ Knit 2 rows on the left side and put the yarn crossing the centre onto needle (2). Knit 2 rows again. Put the yarn on needle (2). Altogether 5 rows have been knitted.



⑧ With the above operations 1 buttonhole is completed. Set the carriages for ribbing and continue knitting until the next buttonhole position.

This type of buttonhole is worked over an odd number of rows. (5 rows, 7 rows, 9 rows)

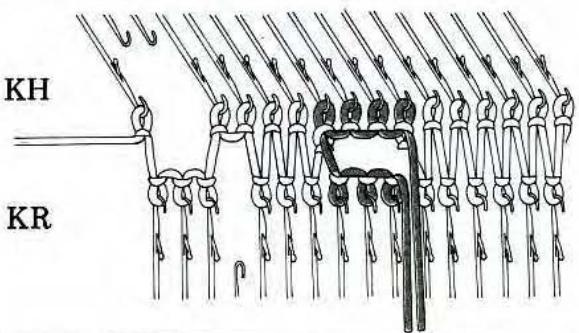
Horizontal buttonholes


At the buttonhole position, manually knit the stitches for the diameter of the button with a piece of yarn in contrast colour and finish the hole in rib stitches afterwards. This type of buttonhole is recommended for flat buttons with diameters of 1.8 ~ 2.0 cm.

Medium yarn

● How to knit

- (KR side is used as right side.)
- ① Work in full needle rib until the buttonhole position.
 - ② Manually knit the number of stitches required for the buttonhole, using a piece of yarn in contrasting colour.

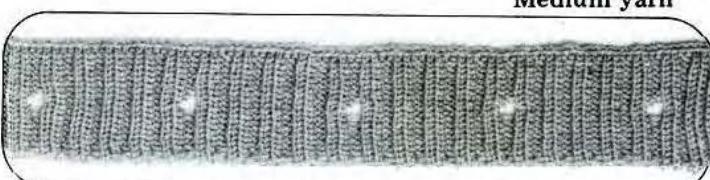


③ Knit until the next buttonhole position and repeat 1 and 2.

④ After knitting is complete, press it lightly with a steam iron, unravel the yarn in contrasting colour and finish the stitches of the under side of the hole in ribbing. As the stitches of the "e" wrap upper side of the hole are reversed stitches, finish them in method with the wrong side facing you.

Buttonholes by transferring stitches

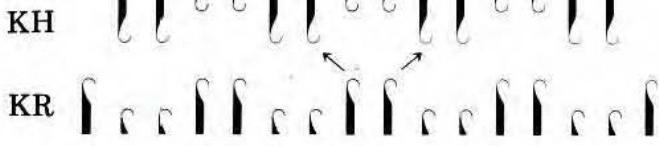
Medium yarn


At the buttonhole position simply transfer a stitch to the adjacent needle. This type of buttonhole is recommended for spherical or cubic buttons of 1.3 ~ 1.5cm size.

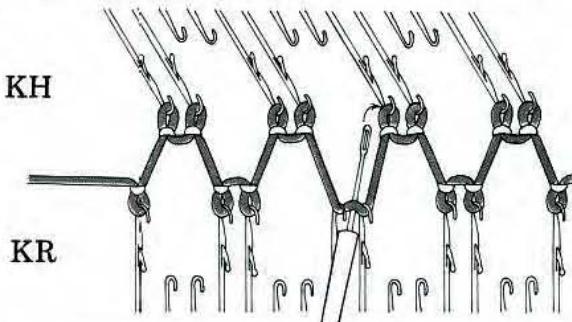
● How to knit . . . 2 x 2 rib

(KH side is used for right side.)

① At the buttonhole position transfer the stitches on KR onto KH. Place the empty needles in B position and knit 1 row.

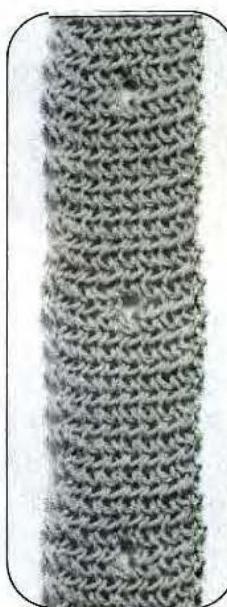


- ② Hook the sinker loop made on the empty needles to KH side as the diagram using a transfer tool.



- ③ Continue to knit for the required number of rows.

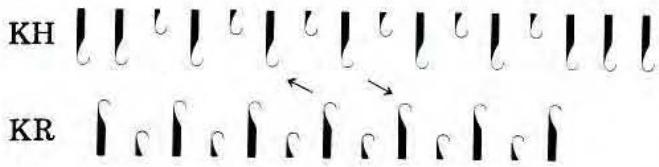
Buttonholes on racking patterns



To work buttonholes on racking patterns of English rib, avoid the tucked row. Transfer the stitches on the row when the stitches are on both knitted beds. Since this type of garment has high elasticity, it is applicable for any shape or size buttons from 1.3 — 2.5 cm.

● How to knit . . . racking pattern of English rib racking indicator → 4 (KH side is used)

- ① Knit until buttonhole position.
- ② When the racking indicator is at 5 and both beds are knitting, transfer the stitches following the direction of the arrows.



- Medium yarn
③ Place the empty needles at B position and knit until the next buttonhole position.

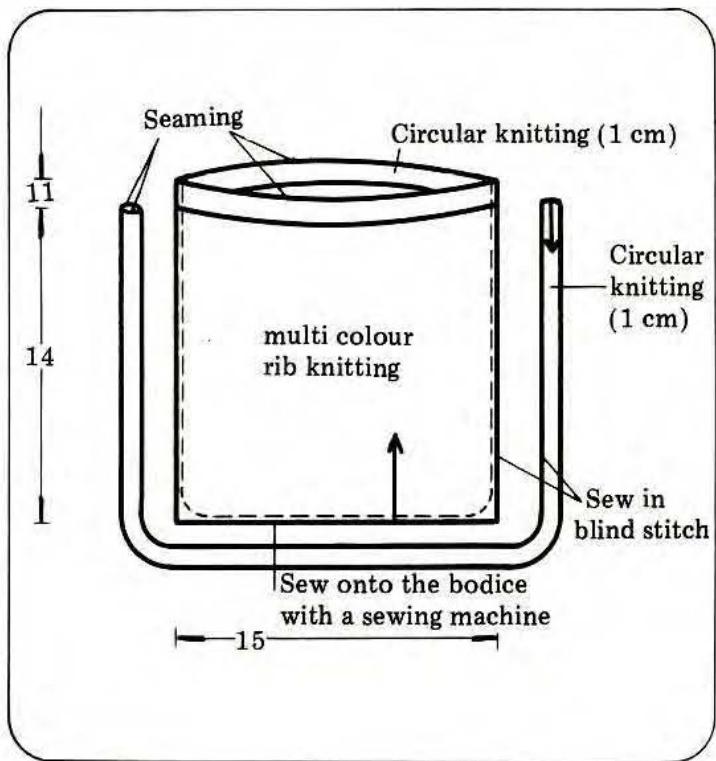
Pockets

For pockets knitted on a double bed, you can trim the opening with a hem of rib knitting, work the bag with circular knitting, or, for a patch pocket in fairisle pattern, a single, neatly-finished pocket can be worked.

Patch pocket



Medium fine yarn



● Bodice

Multi colour rib knitting (Tension dial 2, Slide lever II)

When you knit the bodice mark the pocket position on your work and write down the number of needles and the number of rows on the pattern sheet.

● Pocket

Multi colour rib knitting (Tension dial 2, Slide lever II)

Matching the pattern on the bodice, knit a square piece and 1 cm circular knitting in colour of trimming. Work waste knitting in stocking stitch with the tension tightened slightly.

● How to sew on the trimming

① Circular knitting (Tension dial 1, Slide lever II)

Work a braid 1 cm wide and 3 cm longer than the measurement and sew on evenly around the pocket with blind stitch.

② Tack the pocket at the markers on the bodice and sew on along the trimming using a sewing machine.





Bodice

Medium fine yarn

● Multi colour rib knitting (Tension dial 2, lever II)

While you knit mark the pocket position with a piece of yarn. For when you come to work the flap, to match the design, you should write down the punchcard position.

● Flap

Multi colour rib knitting (Tension dial 2, Slide lever II)

Following the pattern, knit the flap matching the pattern with the bodice. At the end, transfer the stitches on KR over the stitches on KH and finish the edge by casting off.

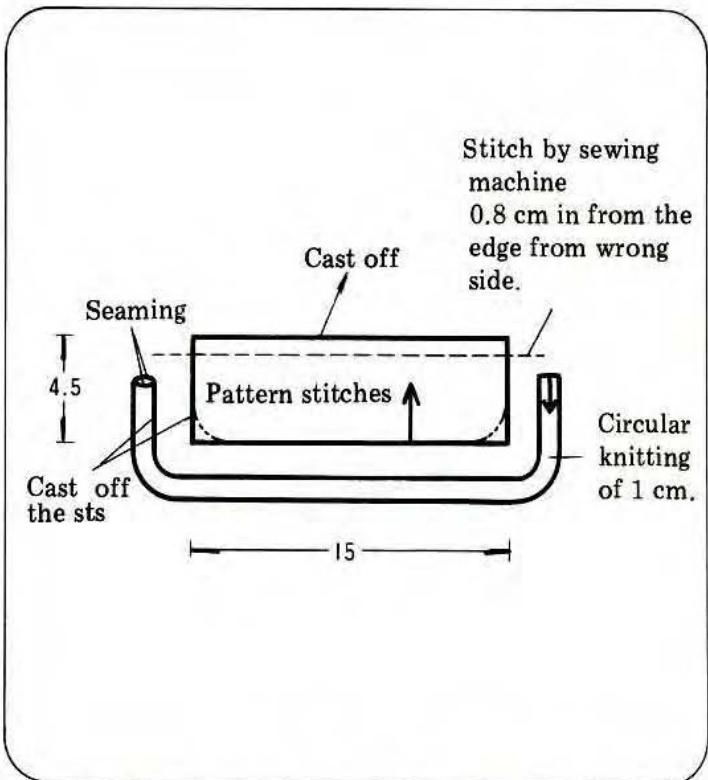
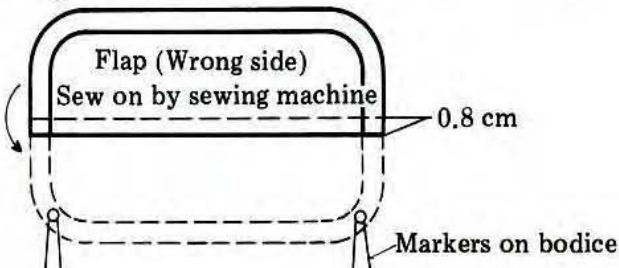
● Trimming

Circular knitting (Tension dial 1, Slide lever II)

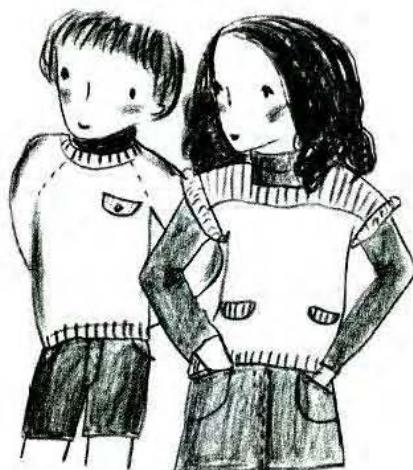
Work circular knitting 1 cm wide and about 3 cm longer than the required length. Sew the braid evenly around the edges of the flap.

● Attaching the flap

① Sew on the flap in position from the wrong side by sewing machines.



② Turn over the flap and press lightly with a steam iron.





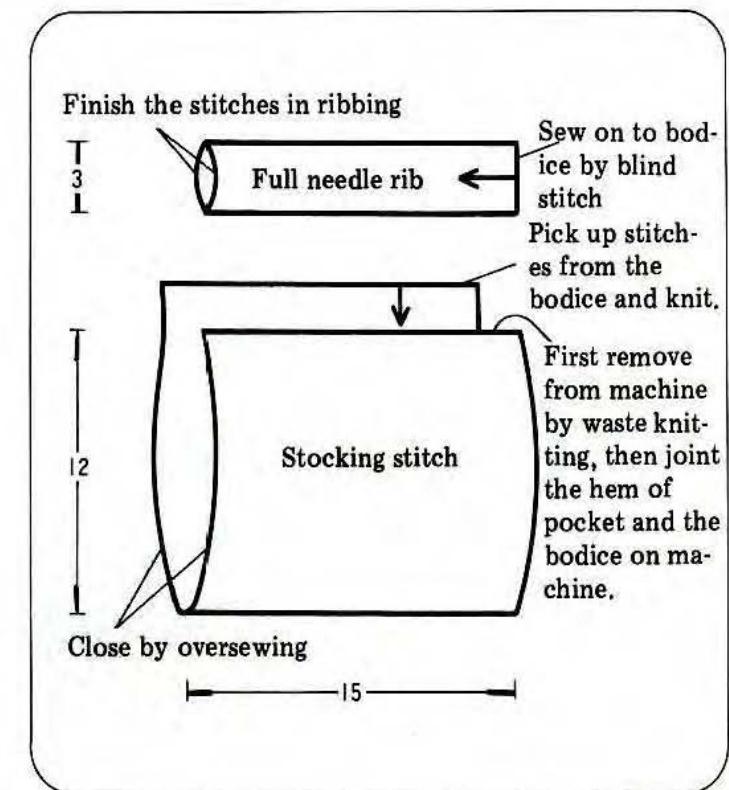
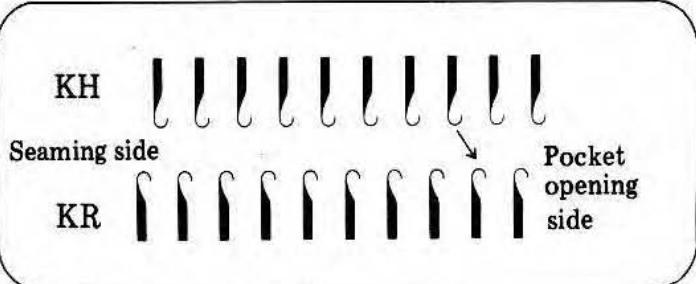
Medium fine yarn

Bodice

Tucking pattern (Tension dial 4, Slide lever II)
At the pocket position, knit 1 row of U type knitting manually. As the needles except those for pocket are selected for the pattern, place the needles for the pocket in E position. (to make it easy to pick up the reversed stitches to work the bag of the pocket). When the bodice is finished, press it lightly with a steam iron to set the stitches at the pocket opening.

● Pocket Hem

Full needle rib (Tension dial 2, Slide lever II)
Arrange the needles following the pattern of garment hem. At the pocket opening side, transfer the stitches to make a smooth edge.



● Pocket bag

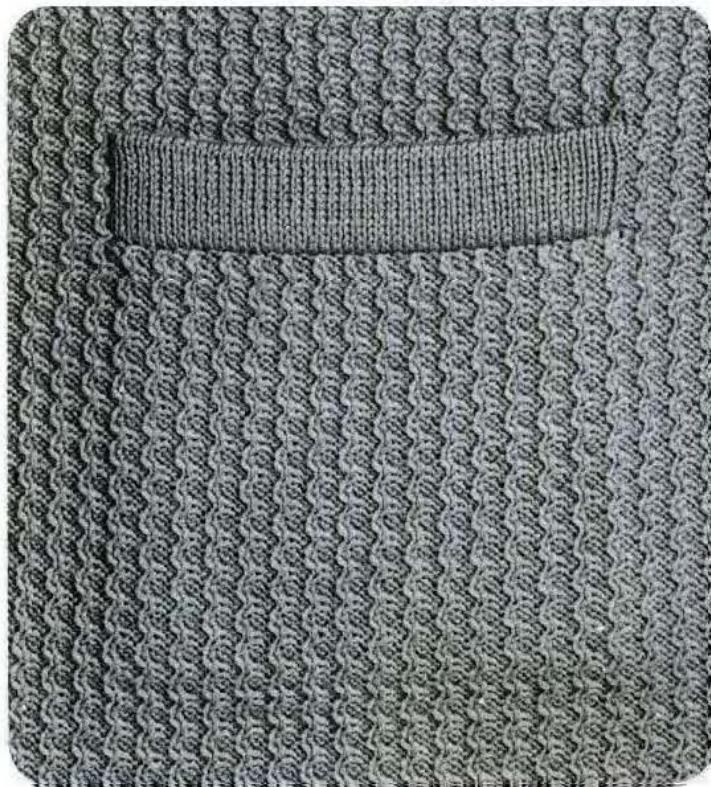
Stocking stitch.

Calculate the number of stitches for the pocket width in stocking stitch. With the wrong side of the garment facing you, pick up the pocket stitches, decreasing the excess stitches evenly.

Knit twice the length of the pocket and remove from machine with waste knitting.

● How to attach the pocket

- ① Onto the KH needles, rehang the bag (right side), the hem (right side) and the bodice (wrong side facing you). Set the tension dial at 10 and knit 1 row. Cast off the stitches by slip stitch using a latch tool.
- ② Sew each end of the hem on the bodice by blind stitch being careful to keep stitches even.
- ③ Close each side of the bag by oversewing.



● Bodice

Medium yarn is used

Racking pattern (Tension dial KH 6, KR 4, Slide lever II)

- ① When you have knitted to the pocket position, transfer the stitches for pocket opening on KR to KH and knit a row manually, over the stitches using waste yarn.
- ② Knit 2 rows on all needles. (The stitches on pocket opening are stocking stitch and the other part is knitted in continuous racking pattern).
- ③ Next, bring out the needles on KR from which the stitches had been transferred to KH needles, pick up the stitch loops, put them back onto the needles, and continue knitting in racking pattern.
- ④ After the bodice is completed, press lightly with a steam iron to settle the stitches of the pocket opening.

● Pocket Hem

Full needle rib (Tension dial 2, Slide lever I).

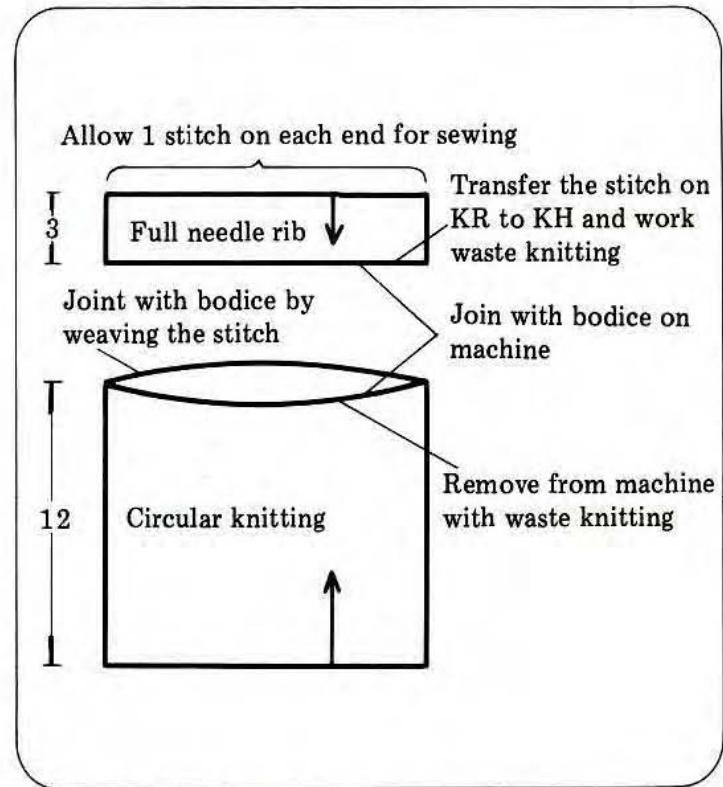
Arrange the needles for the pattern and knit. At the end transfer the stitches on KR to KH and remove from machine with waste knitting.

● Pocket bag

Circular knitting (Tension dial KH 4, KR 5, Slide lever II).

(You should adjust the tension dials to compensate for the difference between beds and also racking stitch and stocking stitch).

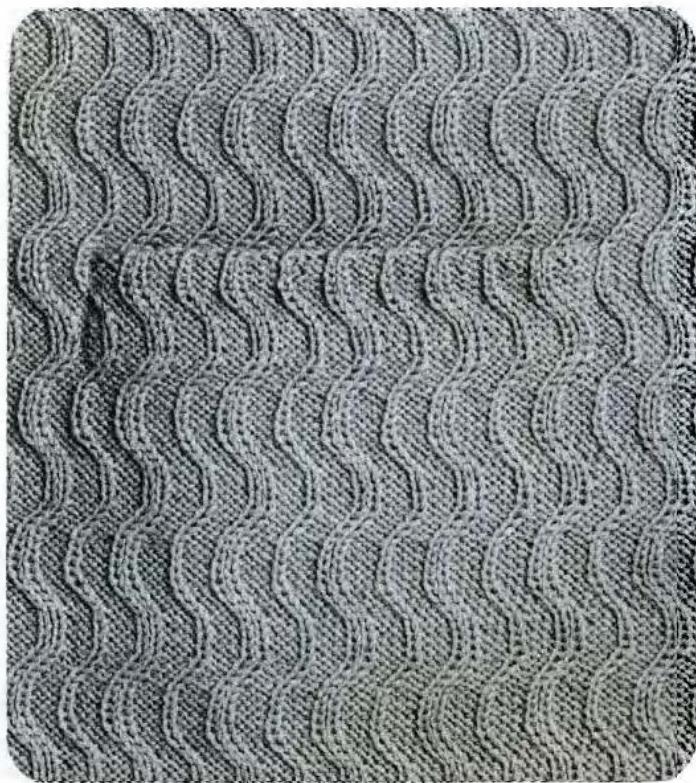
Knit the length of the bag and remove from the machine with waste knitting.



● How to attach the pocket

Rehang the bodice (right side facing), hem of pocket (wrong side) and the bag (right side facing you) onto machine. Set tension dial at 10 and knit 1 row. Cast off stitches using a latch tool. The other side is joined by grafting the stitches. Sew each end of the hem by blind stitch.





Medium yarn

● Bodice

Racking Pattern (Tension dial KH 6, KH 4, Slide lever II) Same as for horizontal pocket No. 2.

● Pocket Bag

Stocking stitch

Pick up the reversed stitches above the row knitted in contrast colour. Knit the length of the bag and cast off the stitches by 'e' wrap method, and remove from the machine.

● Pocket hem

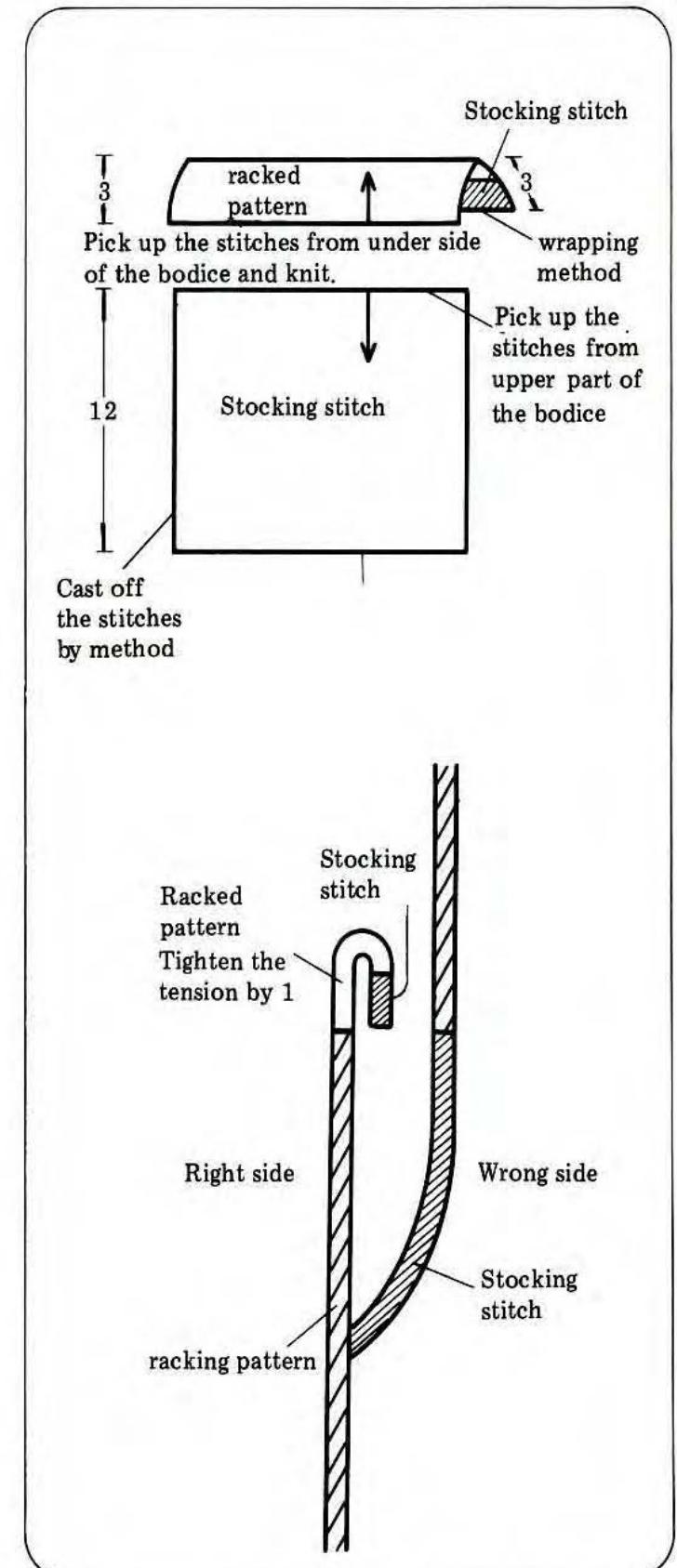
① Racking pattern (Tension dial KH 5, KR 3, Slide lever II).

With the right side of the bodice facing you, pick up the stitches below the row knitted in contrast yarn and put onto KH. Unravel the contrast yarn (pocket opening is separated above and below).

② Return the KR stitches which were temporarily put onto KH needles back to KR needles and add 1 stitch extra each end for seam allowance.

③ Tighten the tension by 1 and knit 4cm (3cm for right side and 1cm for the facing) in pattern. Transfer the stitches on KR to KH and knit 2 cm in stocking stitch.

④ Cast off the stitches by 'e' wrap method and remove from machine. Sew to the wrong side by overcast stitches.



● How to attach the pocket

① Sew on each end of the edge evenly to the bodice using blind stitch.

② Sew the bag onto the wrong side of the garment using split yarn by overcast stitch so that it does not show on the right side.

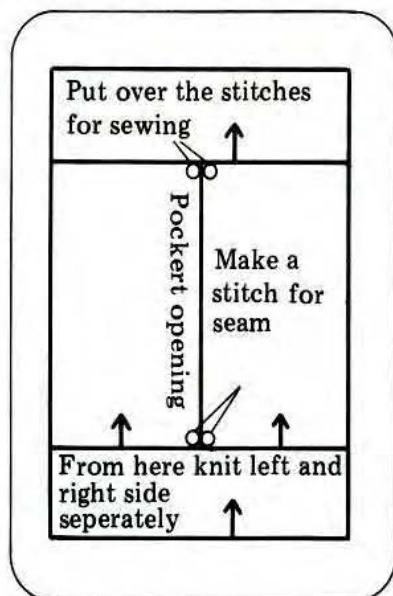


● Bodice

Medium yarn

Racking pattern (Tension dial KH 6, KR 4, Slide lever II)

- ① At the beginning of the pocket position, divide the work into left and right sides. Since it is worked in racking pattern, first transfer the stitches to be held onto the corresponding needles on KH and place in E position.
- ② Set for partial knitting. Increase 1 stitch on each side of the slit for seam allowance and continue knitting on one side for 15cm. Work the other side in the same manner. Decrease the stitch for seam at each side.
- ③ After the bodice is completed, press lightly with a steam iron to make the pocket slit stable.



● Pocket hem

Full needle rib (Tension dial 2, Slide lever I)
Arrange the needles for the pattern and knit.
At the end transfer the stitches on KR to KH and remove from machine with waste knitting.

Transfer the stitch-

es on KR to KH

and work waste

knitting.

2 seaming

Decreasing

stitches

13

Cast off
stitches 1 cm

U-type knitting

Circular
knitting

1

16

10

15

Knit straight

● Pocket bag

① Circular knitting and U-type knitting

Since it is worked in circular knitting, check gauge of KH and KR and adjust as necessary. As with circular knitting one round trip of the carriage equals 1 row, (adjust the Knitleader lever for every other row). Knit the length of the pocket opening. Transfer the stitches on KR for 1 cm at the pocket opening side onto KH needles and cast off.

② Then continue knitting in U-type knitting. The shaping of side is done by decreasing stitches on KH and KR at the same time. At the end of work waste knit on remaining stitches and remove from machine.

● How to attach the pocket

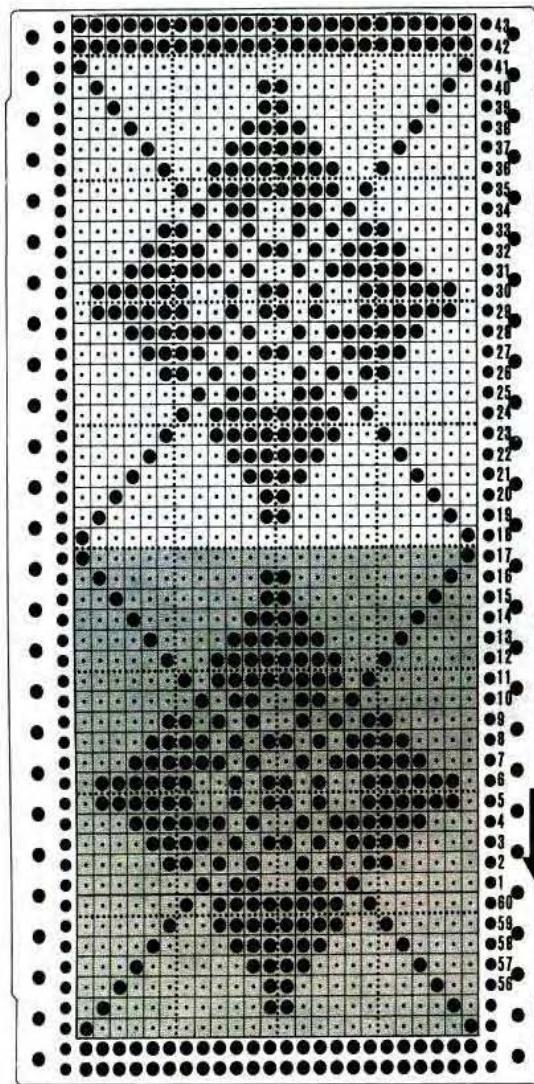
① Rehang the bodice (right side facing you) and the hem of pocket (wrong side facing you) onto the machine. Set tension dial at 10 and knit 1 row. Cast off stiches by slip stitch using a latch tool.

Sew the opening of the bag to the slit on bodice evenly by blind stitch.

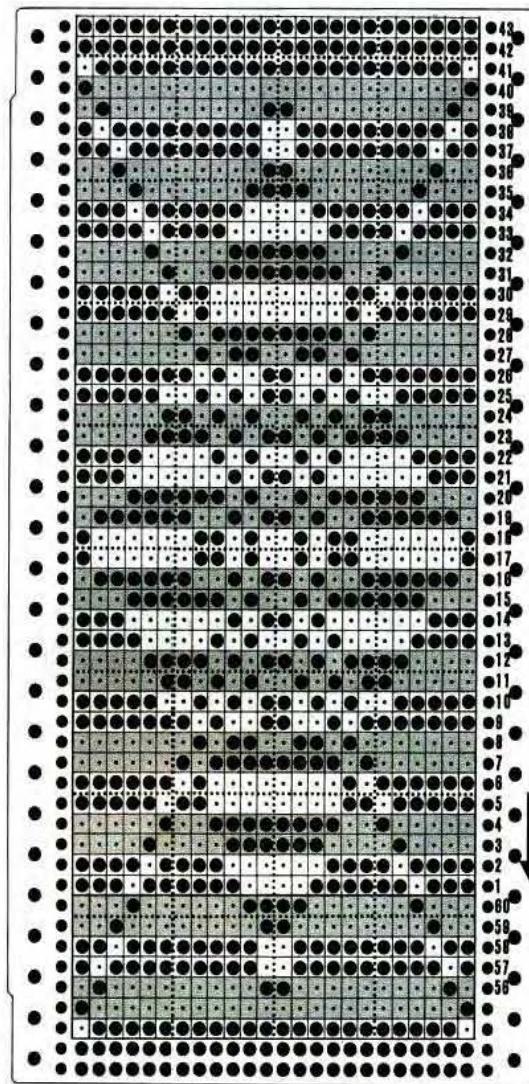
③ Sew on both ends of the hem evenly to the bodice by blind stitch.

■ How to make a punch card and pattern card

Basic Card



Revised Card



● How to design a double bed punchcard

We can work 2-colour fairisle patterns on the single bed in one operation using a punchcard. However, the same card cannot be used for the double bed as well. We have to make out a fresh card, changing the design to 2-colour skip. Do this as follows:-

- ① In order to change fairisle patterns to multi-colour rib patterns, it is not possible to simply punch out every 2 rows alternately. When making a pattern card for skip stitches, the main colour and the contrast colour are knitted separately, starting with the main colour. So in the revised card, the first row is punched for the needle selection for the main colour, then the second row is punched for the needle selection for the contrast colour.

The basic card on the left shows the pattern repeated twice. The Revised Card above shows only one pattern due to the fact that each row is punched twice (once for the main colour and once for the contrast colour).

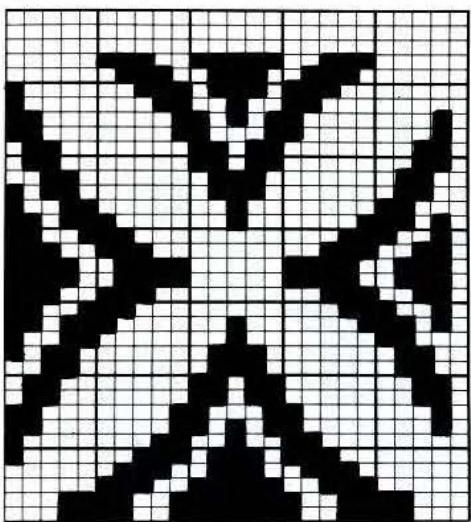
- ② In order to avoid the trouble of changing the colour every row, the revised card is so arranged to change colour every other row. Punch the 3rd (56) row of the revised card for contrast colour. From the 4th (57) row do as follows:-

- 57 Punch for the 2nd row of pattern in main colour
- 58 Punch for the 3rd row of pattern in main colour
- 59 Punch for the 3rd row of pattern in contrast colour
- 60 Punch for the 4th row of pattern in contrast colour

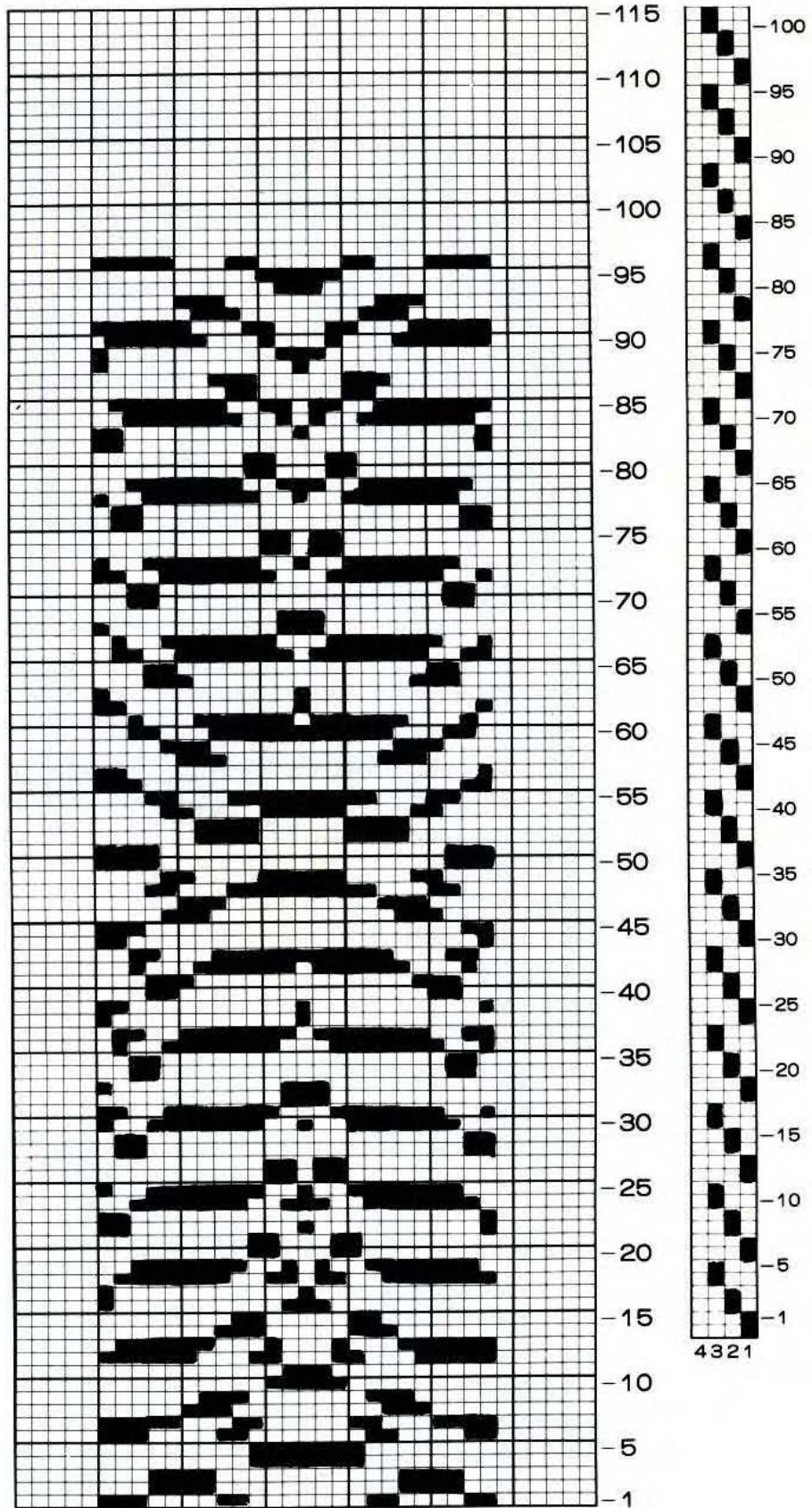
Repeat as above.

After punching out the revised card, you can print a reference number (1., main colour, a .. contrast colour) on the lefthand side of the punchcard so that you know when to change yarns.

Basic pattern sheet



Revised pattern sheet



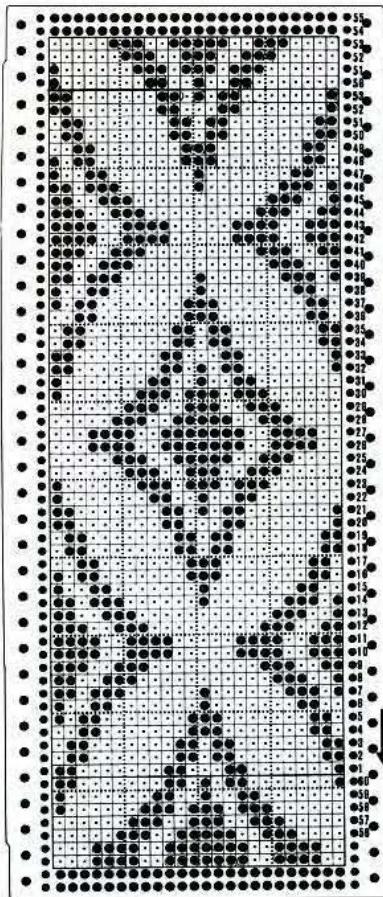
Redraw a revised pattern sheet in the same way as for the punchcard.

- 1st row... Draw in the area for the main colour.
 - 2nd and 3rd rows... Draw in the area for contrast colour No. 1.
 - 4th and 5th rows... Draw in the area for contrast colour No. 2.
 - 6th row... Draw in the area for main colour.
- After this repeat in the same manner.

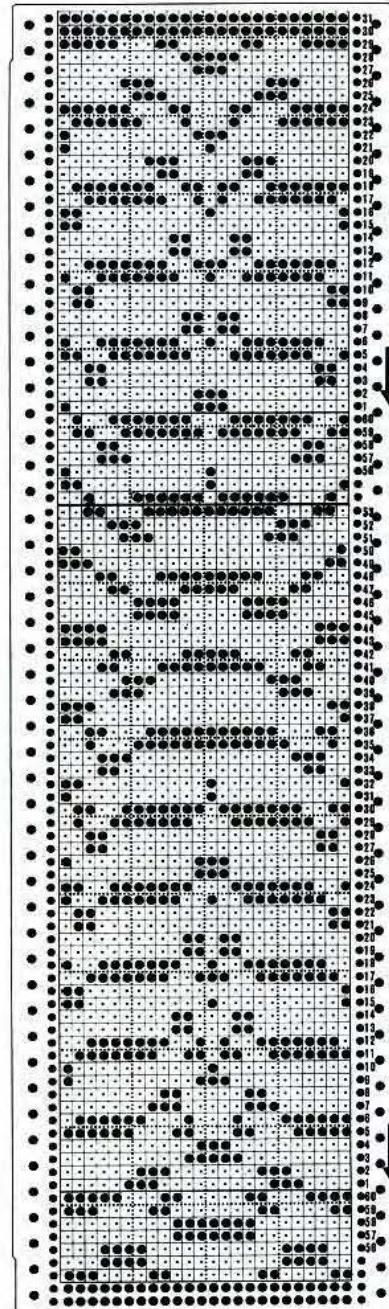
Note: In this example the KRC switch is not used.

How to make a punchcard for Multi (3) colour Rib knitting

Basic card



Revised card



Remake the punchcard for skip stitches in main colour and 2 contrast colours.

- The first row of the revised card is to be punched for needle selection for the main colour.
- 2nd and 3rd (56) row... Punch for the contrast colour No. 1.
- 4th (57) and 5th (58) rows... for the contrast colour No. 2.
- 6th (59) row... for 1 row in main colour.

Repeat as above.

RIBBER TECHNIQUES BOOK

BROTHER

This book has been very difficult to scan. The pages are very thin and shadowing through, and in particular the very pale green writing is not showing up very well. I have therefore typed out all the pale green writing so if you have difficulty in reading the writing refer to the following sheets.

Page 4 bottom left: Racking 1 stitch

Page 4 extreme bottom left: For Fishermans rib

Page 5 just below centre: On push button the needles are selected by the push-button and the Set lever, while with punch card machines, the needles are selected by Punchcard. However with the ribbing attachment there is no difference and the way in which it is used is the same.

Page 5 in the lower box

Left: Punchcard machine

Right: Push-button machine

Lower left: Bulky machine

Lower right: Electronic machine

Page 6 Bottom right: Move the carriage 2 or 3 times gently over the arranged needles to align them finishing with the carriage on the right-hand side.

Page 8 middle right: Above operations complete the finished edge.

(Finished edge cast on using circular knitting)

bottom right: Never return the carriage halfway through a row.
return the carriage after it has passed over all the working needles completely

Page 9 box just below centre on right: * push this needle from A to B position.

bottom left: Casting on (medium yarn)

Page 10 bottom right: How to knit

Page 11 top left 2 x 1 rib needle arrangement

Page 12 bottom left: Casting on (fine yarn)

Page 13 lower right: the above operations complete the finished edge cast -on with circular knitting.

Page 14 centre left: start knitting (medium yarn)

Top right: how to knit

centre right: * when you work tucked rib patterns use the wire-loop type weight hanger on each side.

Page 15 centre left: start knitting

Below: how to knit

Centre right: Casting on (medium yarn)

Below: How to knit

Page 16 bottom left: How to start knitting (fine yarn)

Middle right: How to knit

Bottom right: *For 5 x 5 rib be sure to set Slide Lever at I

Page 17 bottom left: How to start knitting(fine yarn)

Middle right: How to knit

Bottom right: * above operations complete racking pattern.

Page 18 bottom left How to start knitting (fine yarn)

Page 19 middle left: Use fine yarn

Below: how to knit

Bottom left: * If the first or the last needle on KH is not selected. push it up to D position before you knit the next row.

Page 20 middle left: casting on (fine yarn)

Lower left: How to knit.

Page 21 Middle left: Casting on (Medium fine yarn).

Below: How to knit.

Page 22 middle left: Casting on (medium fine yarn).

Lower left: How to knit.

Page 23 middle left: * the number of needles used should be multiples of 5 plus 1 st at each end of work.

Cast on as 1 x 1 rib ending with Carriage on the left. Set Slide Lever to P. Transfer all sts on KR to KH.

Page 24 bottom left: Thread 3 different coloured yarns into the colour changer feeders (Nos. 2, 3 and 4) and with the No. 1 button pushed in, thread the yarn feeder with the basic colour.

Top right: Casting on (use medium fine yarn)

Below: How to knit.

Middle right: * with 850 machine, set both cam levers at "P.R" position and at the same time set both KR change knobs and Slide Lever at lili mark.

Bottom right: Should the patterns not come out as in the picture, but makes stripes, check the card is not 1 row mispositioned or a part button is not pushed in. Check carefully and rectify any mistakes.

Page 26 Middle left: Casting on (medium fine yarn).

Below: How to knit.

Page 27 middle left: Casting on (medium fine yarn).

Below: How to knit.

Page 28 middle left: Casting on (medium yarn).

Below: how to knit.

Page 29 middle left: casting on (medium fine yarn).

Below: how to knit.

Page 30 middle left: casting on (fine yarn).

Below: how to knit.

Page 31 bottom left: casting on (fine yarn).

Top right: how to knit.

Page 32 lower left: * here you will have left side open.

Bottom left: casting on (medium fine yarn).

Top left: How to knit.

Page 33 middle left: Casting on (medium yarn).

Lower left: how to knit.

Page 38 upper left: on KR

Middle left: on KH

Bottom left: another way

Upper right: on KH

Middle right: On KR

Page 39 top left: When you use KR 850 and colour changer, the techniques for increasing and decreasing are different. So refer to the manual for your machine.

Middle left: on KH

Lower: on KR

Bottom left: another way

Middle right: on KH

Lower: on KR

Bottom right: To avoid a bulky decrease on full needle rib or 2 x 1 rib, you can work (1) and (2) separately instead of in a single operation.

Page 44 upper: Increases are worked when the stitches on KR are not tucked.

Bottom left: Left side.

Bottom right: Right side.

Page 46 upper: Decreases are worked when the KR are not tucked.

Bottom left: Left side.

Bottom right: Right side.

Page 48: bottom left: Left side.

Bottom middle: The needle position after racking.

Bottom right: Right side.

Page 50 bottom left: Left side.

Bottom middle: The needle position after racking.

Bottom right: Right side.

Page 52 bottom right: * When increases are desired on KR, reverse the operations.

Page 53 bottom right: *When fewer needles on KR are used, decreases are worked in the same manner by transferring stitches onto the corresponding needles on KH

Page 54 upper left: *The edge where the increase is made might pull tight. Push the needle to E position for smooth knitting.

Page 55 upper right: *If the KR side is used as right side, explanations are reversed.

Page 57: bottom left: *With this needle arrangement 2 stitches on KR are counted as one.

Page 58 middle left: 1 x 1 rib.

Page 59 bottom: * For 2 x 2 rib, 5 x 5 rib and full needle rib, when each row is worked in stocking stitch and no racking is employed, partial knitting is done in the same manner as 1 x 1 rib.

Page 60 middle left: 1 x 1 rib.

Page 61 bottom: *For 2 x 2 rib, 5 x 5 rib and full needle rib, when both when KH and KR both knit normally and no racking is employed, partial knitting is done in the same manner as 1 x 1 rib.

Page 62 middle left: * Partial knitting by decreasing is worked as 1 x 1 rib.

Page 64 upper middle: * To work partial knitting on racking patterns, if the non-knitting needles on KH and KR are placed in E position, they cross one another and the KR bed cannot be racked. So the following method is adopted.

Middle: * Increasing in partial knitting is worked in the same manner as decreasing. However when you return the KR needles, put the stitches back into the hooks using a transfer tool.

Page 66 middle: Setting of carriages

Bottom left; For increasing working stitches.

Lower right: For decreasing working stitches.

Page 66 continued.....

Bottom right * The operations are the same as for single bed machines. However, when the knitting continues after partial knitting, as in the case of a side dart, first switch the pattern lever to knit and do as follows:- After the turning stitches have been worked, transfer the KR stitches which have been held on KH needles, back to the corresponding needles on KR and continue knitting.

Page 68 middle left: How to find the difference in tension.

Lower left: For circular knitting.

Page 69 upper left: The number of weights to use.

Middle left: Even distribution of weights.

Lower right: When to re-hang the comb and weights.

Page 70 bottom left: How to position the weights when working partial knitting.

Upper right: An example of partial knitting of shoulders

Lower right: Other hints.

Page 71 middle: If there is no stitch on the 21st needle on the KH, put the marker on the 21st needle on the KR.

When there is no stitch on the 21st needle on both beds pick up a stitch on KH or KR nearest to the 21st needle and knit another 2 rows. Now return that stitch back to its original needle. Push back the 21st needle to a position.

Page 72 upper right: How to measure the tension.

Middle: For long garments (Trousers, dresses etc. and band).

Lower: [Example 1]

Bottom right: [Example 2] Vertical band.

Page 73 top left: Horizontal band (welts, neckbands etc.).

Middle left: For multi-colour rib, English rib and circular Knitting (Knitleader settings).

Upper right: Rib knitting and English rib.

Lower right: Racking stitch.

Page 74 top left: Pattern stitches by Punch card.

Lower: *As an example, to calculate the sample below, measure 40 stitches over both the tucked and full needle rib areas and take the average as the tension for this pattern.

Bottom left: Consider the elasticity of the yarn.

Lower right: Consider the characteristics of the stitch.

Bottom right: Consider stretch due to weight of the materials.

Page 75 bottom left: *In this case be careful that the teeth on the comb are correctly in position as illustrated in the diagram on the left.

Page 77 top left: Fine yarn.

middle left: Setting the stitches of the pattern.

Bottom left: Setting the machine.

Top right: Very fine yarn

Middle right: Setting the stitches for pattern.

Bottom right: Setting the machine.

Page 78 top left: Very fine yarn.

Middle left: Setting the stitches of the pattern.

Bottom left: Setting the machine.

Top right: Medium yarn.

Middle right: Setting the stitches for the pattern.

Bottom right: Setting the machine.

Page 79 top left: Medium yarn.

Middle left: Setting the stitches for the pattern.

Bottom left: Setting the machine.

Top right: Medium yarn.

Middle right: Setting the stitches for pattern.

Bottom right: Setting the machine.

Page 80 upper left: Circular waste knitting.

Top right: U-style waste knitting.

Page 85 upper * For this your knitting should end with either Circular or U-style knitting.

Middle: * When joining stitches and rows, first calculate their ratio to each other.

Lower left: Joining on machine.

Page 87 top left: How to read the chart.

Page 88 upper left: FOR VERTICAL BORDER (IN FULL NEEDLE RIB).

Top right: FOR HORIZONTAL NECKBAND (IN FULL NEEDLE RIB)

Middle right: For waist band ribbing (2 x 2 rib).